Explaining the Intention of IT Workers to Telework: A South African Perspective

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Abstract

The concept of teleworking has been around for more than 40 years. Telework is commonly defined as the use of Information and Communication Technology (ICT) by employees to perform their day-to-day activities while being away from the traditional office. Telework or telecommuting, as it is also known, has received a lot of attention from researchers and organisations over the years due to its many reported benefits. Literature on telework is extensive, covering a wide range of topics including the demographics of teleworkers, different societal, organisational and individual perspectives on telework as well as the role of technology in telework. Despite all of this attention, telework adoption rates have remained low over the years. In South Africa, telework adoption is particularly low when compared to the rest of the world. The majority of past telework research has been focused on the organisational aspects of telework and adoption factors from the worker's perspective are not well understood. Furthermore, the literature reflects that the Information Technology (IT) profession could benefit from remote work practices due to high levels of stress amongst IT workers. This study therefore attempted to answer the question, *"What factors influence South African IT workers' intention to telework?"*.

Using an existing research model based on the Theory of Planned Behaviour (TPB), an explanatory research approach was followed with the objective of determining the influence of the TPB elements namely attitude, subjective norms and perceived behavioural control on IT workers' intention to adopt telework. The model was tested by means of an online survey, for which a total of 120 valid responses were received. Both quantitative and qualitative analysis methods were used to analyse the data collected. The sample size was fairly small and the geographical location of survey respondents could not be reliably established. These factors impact on the generalisability of the findings, which is a limitation of the study.

Analysis of the data revealed a number of interesting findings. IT workers' attitudes towards telework were found to have little bearing on their intention to adopt this style of work. Similarly, the influence of significant others (subjective norms) did not significantly influence IT workers' intention to telework. Instead, a key determining factor of the intention to telework was the perceived behavioural control of IT workers which was, in turn, determined mainly by the availability and cost of the technology that enables telework, the level of support for teleworking provided by employers and the level of self-efficacy experienced by these workers. These findings are in contrast to the results of prior research, supporting the idea that initial adoption and telework continuance behaviours are different. The results also suggest that the South African context of this study is potentially significant and that the cost of bandwidth is still a major inhibitor of telework amongst local IT workers. The implications of these findings are that management needs to improve IT workers' access to remote work technology and better support staff who wish to telework by providing them with financial support and training.

Issues relating to company culture were identified as potential areas for future telework research. This research makes a contribution to theory by highlighting the importance of belief elicitation when applying the TPB to different contexts.

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List of Acronyms

ICT	Information and Communication Technology
IS	Information Systems
IT	Information Technology
TAM	Technology Acceptance Model
TPB	Theory of Planned Behaviour

Chapter One: Introduction

1.1 Background

Information and Communications Technologies (ICTs) are an integral part of the business processes of organisations in all sectors of the economy and have the potential to contribute significantly to business performance. In a constantly changing business environment, ICT systems and skills must keep up with the changing requirements of business (Paterson and Roodt, 2008). Appropriately skilled Information Technology (IT) workers are therefore essential to organisations who want to make effective use of ICT resources. South Africa, like many emerging economies, has a shortage of skilled workers, with a national shortage of approximately 70,000 skilled ICT professionals. At the same time the country is producing fewer ICT graduates, which is compounding the problem (Plaatjies and Mitrovic, 2014). This shortage of skills suggests that an organisation's ability to attract and retain IT staff has become a critical factor for achieving the strategic goals of the business. IT professionals often take key skills and knowledge with them when they leave the organization. This can delay the implementation of strategic IT projects whilst putting additional strain on the remaining project team members, leading to frustration and further IT staff turnover (Moore and Burke, 2002). Furthermore, due to high demand for their specialised skills, replacing IT workers has become an expensive exercise (Ghapanchi and Aurum, 2011). In order to attract and retain employees in the war for talent, some companies allow their IT employees to telework, that is, to work from home or other locations away from the traditional office. Due to advances in technology, an IT teleworker can be just as effective and productive while working from home as they can be in the office (Weinert, Laumer, Maier and Weitzel, 2014).

Though there is wide acceptance of telework within the IT sector, some challenges exist with its implementation, such as social isolation due to the temporal and spatial distance to the workplace when teleworking (Weiner et al., 2014). Globally, the adoption of telework has been below the levels initially anticipated. Resistance from management has often been cited as the cause (Pyöriä, 2011; Scholefield and Peel, 2009), however some workers have also displayed a lack of enthusiasm for adopting this style of work (Offstein, Morwick and Koskinen, 2010). Compared to the rest of the world, the adoption of telework in South Africa is particularly low (Baard and Thomas, 2010). By not taking advantage of teleworking opportunities, workers may be missing out on its many purported benefits such as improvements in productivity and work-life balance. This is of particular relevance to IT workers, who have been identified as good candidates for telework and who also stand to benefit from the advantages that teleworking offers (Sharit, Czaja, Hernandez and Nair, 2009).

1.2 Introduction to Telework

Telework or telecommuting is commonly defined as the use of ICT to enable daily work activities to be performed while being away from the office (Andreev, Salomon and Pliskin, 2010). The telework concept was originally developed in the United States of America (USA) during the 1970s in an effort to reduce the country's fuel consumption and dependence on fossil fuel (Nilles, 1975). More than 40 years later, telework is still the topic of much debate and research due to its potential benefits for individuals and organisations (Haddad, Lyons and Chatterjee, 2009). The traffic congestion and long commutes that have become a common feature of major cities have contributed towards maintaining the high level of interest from researchers in this topic. South Africa, with its annual increase in vehicle traffic of 5.2% and lack of efficient public transport systems, is no exception (Baard and Thomas, 2010).

Different types of telework are discussed in the literature including home-based work, mobile work and the use of telecentres (Baard and Thomas, 2010). Home-based teleworkers perform their work activities during normal business hours while based at home either full-time or part-time. Mobile teleworkers use mobile technology to work from different locations such as coffee shops and customer sites. Telecentres are fully equipped satellite offices that are provided by employers in order to alleviate problems with remote employees commuting to the main office (Abbott and Yoong, 2005). For the purposes of this research, a teleworker is defined as someone who works from home for at least one day per week.

Telework is also changing the nature of work by removing the boundaries of where work can be performed, while redefining the way individuals collaborate and engage in work (Smith and McKeen, 2011; Wang and Haggerty, 2011). Advances in ICTs have made teleworking increasingly viable and cost effective as an alternative style of work and have renewed interest in this topic (Hunton and Harmon, 2004). The development of mobile ICTs has further extended the options for remote work beyond the boundaries of home and telework centres (Hislop and Axtell, 2007). Interest in telework research also stems from the fact that workers are expressing an increasing desire to balance work and home life. Organisations should therefore consider innovative solutions such as telework to deal with these challenges (Thompson and Aspinwall, 2009).

The subject of telework has attracted a lot of attention from researchers and a substantial amount of telework-related literature has been produced over the years (Haddad et al., 2009). The sustained interest of Information Systems (IS) researchers in the topic of telework becomes evident when reviewing IS journal articles and conference proceedings of the past decade. One of the main areas of focus in past research has been the benefits and drawbacks of telework to society, organisations and individuals. The often-reported benefits of telework include greater flexibility and a better work-life balance for workers, while organisations can benefit from higher worker productivity and lower absenteeism (Andreev et al., 2010).

Some of the challenges cited in past telework research include difficulties with employee performance management (Haddad et al., 2009) and problems with workers' ability to manage the boundary between work and home life (Campbell and Heales, 2008). The ambiguity and

contradictions found in past research on telework, coupled with the increasing role and importance of ICT in the transformation of work, indicate that further research is required in this field (Boell, Campbell, Cecez-Kecmanovic and Cheng, 2013).

Telework practices are most suited to knowledge work such as the accounting and IT professions (Beasley and Lomo-David, 2000). The suitability of IT workers for telework is further supported by findings that IT personnel generally have a high need to achieve and accomplish tasks, but have a low need to interact with others (Smith, 2004). In the literature, IT workers are shown to be more prone to experiencing work-life conflict and burnout than workers in other functional areas. This has resulted in high staff turnover, a lack of job satisfaction and reduced organisational commitment within the IT profession (Messersmith, 2007). By considering the individual needs of employees such as greater autonomy or a better work-life balance, organisations can reduce IT worker turnover (Smith and Speight, 2006). For these reasons this study focuses on the adoption of teleworking as it pertains to IT workers.

1.3 Purpose of the Research

The purpose of this study is to gain a greater understanding of the factors that affect the intention of IT workers to telework. Through analysis of the teleworking intentions of IT workers, the researcher aims to provide deeper insights into the factors that drive their behaviour. An online survey was used to collect the relevant data from a sample of South African IT workers working in organisations where telework was permitted.

Most studies on the adoption of IT innovations assume that the indivual's behaviour is voluntary. However, the decision to adopt telework can be influenced by significant external constraints as well as pressures from superiors, family members and peers (Khalifa and Davison, 2008). In the literature, few studies were found to examine the influence of these factors on the telework adoption decision. Research on teleworking in South Africa is sparse and little historical information on telework adoption is available within the local context (Baard and Thomas, 2010). This study contributes to this limited body of knowledge. The outcomes of this research could provide useful insights for researchers as well as IT practitioners who are considering the implementation of telework policies.

1.4 The Research Question and Research Objectives

The research attempted to explain the intention of IT workers to adopt telework by applying a model based on Ajzen's (1991) Theory of Planned Behaviour.

The research focused on the question, **"What factors influence South African IT workers' intention to telework** ?**"** and its sub questions:

1. How does Attitude and its antecedents influence South African IT workers' intention to adopt telework ?
2. How does Subjective Norms and its precursors influence South African IT workers' intention to adopt telework ?

3. How does Perceived Behavioural Control and its determining factors influence South African IT workers' intention to adopt telework ?

The objectives of this research were:

(i) To establish the effect that elements of the Theory of Planned Behaviour namely Attitude, Subjective Norms and Perceived Behavioural Control have on IT workers' intention to adopt telework.
(ii) To determine the effect of the respective antecedents of Attitude, Subjective Norms and Perceived Behavioural Control.

The researcher aimed to answer the research question and achieve the research objectives by gathering and analysing relevant data on telework adoption and adoption intention from a wide sample of IT workers, using a survey. This process is discussed in detail in Chapter 4 (Research Design).

The next chapter contains a review of relevant literature, followed by a description of the theoretical background and the research model chosen for this study in Chapter 3. The research methodology is discussed in Chapter 4 and the results of the data analysis and subsequent research findings are then presented in Chapter 5. Lastly a discussion of the findings and concluding remarks are provided in Chapter 6.

Chapter Two: Literature Review

In this chapter, common research themes found within the telework literature are examined including teleworker demographics, the role of technology as an enabler of telework and the different societal, organisational and individual aspects of telework. The concepts of the IT worker and the IT profession are then engaged and the particular relationship that exists between IT workers and telework is explored. Related research is also discussed and the gap in the current research identified.

2.1 Teleworker Demographics

Previous telework studies attempted to determine the typical profile of a teleworker by considering aspects such as age, gender, occupation and education (Haddad et al., 2009). This section takes a closer look at some of the factors highlighted in the literature.

2.1.1 Gender

Working women are generally considered to be in greater need of flexible work arrangements, since they are often the primary caregivers in the home. Studies have found a reduction in absenteeism amongst women who were allowed to participate in telework programs (Beauregard and Henry, 2009). However, research done in the United Kingdom established that most teleworkers were male, thus this stereotype can be misleading (Ruiz and Walling, 2005). Interestingly, South African men expressed a greater desire to telework then their female counterparts, possibly due to changes in family dynamics resulting from the emergence of dual-career families (Baard and Thomas, 2010). As a result, information on which gender participates most in telework remains largely inconclusive.

2.1.2 Age

A study done by Thompson and Aspinwall (2009) examined the importance of work-life balance and flexible work options amongst young job entrants when choosing job opportunities. The results indicated that the vast majority of young people were attracted to jobs that offered flexible work, however telework was ranked lower than other benefits such as the availability of childcare services. This indicates that, though important, flexible work arrangements on their own are not a key consideration for young people (Thompson and Aspinwall, 2009).

For older workers, telework can be beneficial by addressing some of the challenges experienced by this group of employees. Physical disabilities and other mobility problems experienced by older workers can be overcome by utilising telework (Sharit et al., 2009). Additional benefits relate to the reduction of the daily commute to the office as well as the removal of distractions from others in the office. Considering their value in terms of knowledge, experience, trustworthiness and accountability, organisations should consider telework as a retention measure for older workers (Sharit et al., 2009).

2.1.3 Marital Status and Children

In previous studies, two demographic factors commonly associated with telework adoption were marital status and the number of children in the home. In a study of teleworking in Ireland, Fu, Kelly, Clinch and King (2012) found that marital status, being a single parent with young children and the number of residents in a household had a significant impact on teleworking. In research conducted in Japan, gender and the presence of children in the home were associated with a higher propensity to adopt telework (Maria and Hitoshi, 2012). Baard and Thomas (2010) identified significant associations between the number of dependants at home and improvements in work-life balance as well as reduced stress levels amongst South African teleworkers. Aboelmaged and Elamin (2011) highlighted gender and marital status as important influencers of attitudes towards telework in the United Arab Emirates (UAE), however the number of children were not relevant. The significance of these factors can therefore be expected to vary, depending on the context of the research.

2.2 Technology and Telework

Technology is a key component of any telework program since it provides workers with the tools that enable remote communication and collaboration. Email, teleconferencing and unified communication software are common tools used by teleworkers to collaborate and share information. The essential infrastructure required for telework success include a reliable internet connection and remote access to the company office (Siha and Monroe, 2006). A number of ICT developments such as smart phones and high-speed broadband internet have added to the mobility and flexibility of work over the years (Pyöriä, 2011). The relative low cost and general availability of these tools has been a major driver of telework adoption in recent years (Turetken, Jain, Quesenberry and Ngwenyama, 2011).

2.3 Societal Aspects of Telework

A number of authors have examined the impact of telework on society, ranging from its benefits in terms of reduced travel and traffic congestion, lower pollution and energy consumption to the role of telework in crisis management situations and in changing the nature of work itself (Lewis, Gambles and Rapoport, 2007; Haddad et al., 2009).

2.3.1 Travel

The potential of telework to reduce travel and its associated negative effects has received much attention from researchers. Reducing pollution and the adoption of environmentally friendly practices is becoming increasingly important to both individuals and organisations in the wake of the many “green” initiatives of recent years (Mattern, Staake and Weiss, 2010). Avoiding the daily commute to the office is also widely cited by employees as a major motivating factor for wanting to telework (Peters, Tijdens and Wetzels, 2004).

Studies done by Helminen and Ristimäki (2007) and Andreev et al. (2010) have shown that telework can impact travel patterns in different ways. Substitution is what occurs when the need

to travel is eliminated, which is the most desirable outcome of teleworking (Andreev et al., 2010). Complementation has the effect of generating new travel - an example of this is the additional travel stemming from an increased desire for teleworkers to meet face-to-face with others, as a result of the isolation created by teleworking. Modification refers to a mere change in the type, duration or frequency of travel, or if the overall effect is neutral. An example of this phenomenon is reflected in a study done in Finland, which found that teleworking staff used their private vehicles to run errands on the days that they were teleworking, thus negating the travel savings obtained from not commuting to the office (Lehmann and Hietanen, 2009). Overall the literature reveals that telework results in a reduction in travel over the short term, though the benefits over the long term are not definitive (Andreev et al., 2010).

2.3.2 Energy Consumption

Traditional office workers consume high amounts of energy in the form of office lighting, heating and cooling while teleworking enables organisations to reduce their overall energy consumption (Lehmann and Hietanen, 2009). When employees are allowed to work away from the company office, the energy consumption at the office decreases. This results in a decentralized power model, with commercial energy requirements reducing while residential power usage increases (Mattern et al., 2010). Organisations can realize significant cost savings through substantial reductions in the energy required for lighting, heating and cooling of offices (Lehmann and Hietanen, 2009). Further cost savings can be achieved by reducing the office space required for employees and through reductions in carbon emissions taxes (Nelson, Safirova and Walls, 2007). These potential benefits provide an added incentive for organisations to consider the adoption of telework (Lehmann and Hietanen, 2009).

2.3.3 The Changing Nature of Work

In 2008, the number of information workers in the USA was estimated at over 50 percent and this number was growing (Hoang, Nickerson, Beckman and Eng, 2008). This trend indicates a change in the nature and type of the work that is required of employees and that will be required into the future. Information work is a good fit for telework (Beasley and Lomo-David, 2000) and most teleworkers today fall into the information work or knowledge work category. As such, this change in the nature of work towards information work can be seen as an important driver of telework (Lehmann and Hietanen, 2009). Following the trend towards knowledge work, there has been an equivalent rise in the number of distance workers, with more than 14 million Americans working at home (Hoang et al., 2008). A steady growth in the number of jobs in the creative sector such as the arts, design and technology has created a third positive trend. Increases in these types of work activities are all conducive to the growth of telework (Lehmann and Hietanen, 2009).

2.3.4 Crisis Management

Governments and organisations have realized that they can make use of telework as part of their business continuity strategy in the event of a crisis such as severe weather, earthquakes and terror attacks (Hoang et al., 2008). In disaster situations, teleworking can reduce a company's vulnerability to risks such as the loss of key staff members, the loss of equipment and company

data as well as disruptions in employee transport. Having employees, equipment and data spread across a larger geographic area helps to mitigate these risks. Establishing teleworking guidelines has become a critical part of business continuity planning (Riswadkar and Riswadkar, 2009).

2.4 Organisational Aspects of Telework

The majority of the telework literature examined is focused at the organisational level. Issues such as management control of remote employees, organisational culture, trust and communication are all discussed within the context of telework (Hunton and Harmon, 2004; Forgacs, 2010; Martin and MacDonnell, 2012). The perceptions and attitudes of management towards telework have received much attention, while critical success factors for implementing telework practices have been the focus of several studies (Kowalski and Swanson, 2005). The potential organisational benefits of telework in terms of reduced staff turnover, higher employee productivity and savings in office space costs have been highlighted by many researchers. Teleworkers experienced less role conflict and role ambiguity compared to non-teleworkers, exhibited higher levels of satisfaction with their supervisors and showed greater commitment to the organization (Boell et al., 2013). Some potential drawbacks of telework discussed in the literature include its negative impact on organisational culture, the challenges of coordinating activities between office-based and remote workers and challenges with management resistance to telework (Pyöriä, 2011; Scholefield and Peel, 2009).

A few practical considerations exist when considering the adoption of a telework program in an organisation. Firstly, telework should be compatible with the existing practices, management style and reporting structures of the organisation (Haddad et al., 2009). The majority of job functions within the organisation should lend themselves to this style of work, for example jobs requiring high degrees of physical interaction or constant knowledge transfer may not be suitable for telework (Butler, Aasheim and Williams (2007). The practical aspects of telework could also be extended to include other forms of organisational support such as the provision of ICT equipment, creating telework policies and procedures, adjusting performance management practices to cater for teleworkers and the provision of training for teleworkers (Boell et al., 2013). One of the critical success factors of a telework program is that management identifies and selects the job functions most suitable for its implementation (Peters, et al., 2004). The right candidates should then be selected from within those jobs. Management must create a supportive environment in order for telework to be successful and to deliver the expected benefits (Turetken et al., 2011).

2.5 Individual Aspects of Telework

The willingness and ability of individuals to participate in telework programs has a significant impact on its adoption and diffusion. However, telework literature focused at the individual level deals mainly with the advantages and disadvantages of telework for employees (Baard and Thomas, 2010; Hill, Ferris, and Märtinson, 2003; Baruch, 2001).

2.5.1 Potential Advantages for Employees

Telework has many potential benefits for employees. The benefits most commonly mentioned in the literature relate to the flexibility that telework provides in terms of workers being able to choose how, when and where to work, better work-life balance and higher personal productivity (Haddad et al., 2009). In addition, teleworkers can lower their expenses in relation to travel and clothing required to meet office dress codes (Kanellopoulos, 2011). Using mobile technology, the range of locations where work can take place extends beyond the home and office to include coffee shops and even remote areas (Baard and Thomas, 2010). Having such flexibility means that workers can better balance their work commitments and personal or family needs, which contributes to overall job satisfaction (Gajendran and Harrison, 2007).

According to Chen (2008) employee job satisfaction is a product of two factors, namely the worker and the work itself. Different aspects of work such as autonomy, feedback and goal orientation have an effect on the job satisfaction levels of teleworkers. Autonomy refers to the level of freedom and discretion that an employee is allowed in completing work tasks. The degree to which the individual feels personally responsible and accountable for their work is strongly related to the autonomy given to them (Nicholas and Guzman, 2009). The autonomy given to teleworkers has been linked to higher levels of job satisfaction and increased loyalty to the company (Sharit et al., 2009). Feedback is the degree to which employees receive information about their performance or effectiveness (Lautsch, Kossek and Eaton, 2009). Employees can obtain feedback from the work itself or through formal feedback from a supervisor (Smith, 2004). Considering the reduced physical interaction that occurs in teleworking, it is essential for the success of telework programs that management makes an effort to increase feedback for teleworkers (Lautsch et al., 2009).

Teleworkers have more time to engage in productive work since they do not have to commute and can work in an environment free from interruptions by colleagues at the office. The freedom to choose work patterns that suit the individual workers provides opportunities for increased creativity, problem solving and higher productivity levels. This is especially true for those workers in the creative and problem solving fields, such as software developers (Pyöriä, 2011).

2.5.2 Potential Challenges for Employees

There are several potential negative factors and challenges associated with telework. Working from home often leads to a blurring of the permeable boundary between work and home life. If clear boundaries are not set, conflict can develop between the two spheres, which can have a negative effect on workers' private and professional lives (Baard and Thomas, 2010; Haddad et al., 2009). In contrast to the claimed productivity benefits of teleworking, distractions in the home (such as the presence of young children) can actually reduce productivity (Pyöriä, 2011). Donnelly (2006) also argues that opportunities for collaboration and teamwork are reduced when teleworking, which can impact negatively on productivity.

Telework can contribute to social and professional isolation of workers since it reduces the ability to socialise and build informal ties with colleagues (Pyöriä, 2011). Blue, Serva, Baroudi,

and Benamati (2009) associate this lack of "human moments" with increased stress levels and emotional distance in teleworkers. Professional anxiety can develop when workers have limited opportunities to assess their performance compared to their colleagues (Pyöriä, 2011; Baard and Thomas, 2010). Fears of being overlooked for career and development opportunities have been attributed to the isolation and lack of visibility experienced by teleworkers (Hill et al., 2003). Furthermore, the absence of regular face to face interaction between colleagues inhibits the development of trust relationships (Gajendran and Harrison, 2007). Being away from the office presents other challenges for teleworkers, such as having to solve technical issues by themselves and being exposed to interruptions by others in the home (Scholefield and Peel, 2009).

2.6 IT workers and the IT Profession

IT workers are professionals who acquire, develop or manage IT resources such as hardware, software and communication networks. These workers are usually employed in either IT vendor or IT user organisations, performing a wide range of IT-related functions. IT vendor organisations generally develop IT products and services which are purchased and deployed by IT user organisations across all sectors of the economy (Paterson and Roodt, 2008).

IT jobs can be classified into two broad "job families" namely, systems development and IT infrastructure (Slaughter, Ang and Fong Boh, 2007). The primary job categories in the system development job family relate to the writing, testing and implementation of software code and include roles such as application programmers, systems analysts and project managers. Technical specialists (e.g. database administrators, network specialists and operating system specialists), systems administrators and infrastructure managers have the primary task of designing, implementing and maintaining specific aspects of the IT infrastructure (Slaughter et al., 2007). These roles are summarised in Table 2.1.

Position	Job Description
	SYSTEMS DEVELOPMENT JOB FAMILY
Applications Development Manager (AM)	Plans and oversees multiple projects and project managers. Works with senior management to determine systems development strategy and standards. Administers department budget and reviews project managers.
Project Manager (PM)	Plans and oversees the development and support of one or more projects. Coordinates resources, schedules, and communications for applications development projects. Develops project schedules and assigns tasks for applications development projects.
Systems Analyst (SA)	Works directly with management and users to analyze, specify, and design business applications. Serves as contact with user groups and systems management.
Applications Programmer (AP)	Develops detailed functional, system, and program specifications. Codes and maintains business applications on particular hardware/software platforms.

IT INFRASTRUCTURE JOB FAMILY	
Infrastructure Manager (IM)	Plans, manages, and coordinates all matters related to IT hardware, software, systems, data, network, and telecommunications infrastructure.
Technical Specialist (TS)	Designs and manages specific aspects of the IT infrastructure such as hardware, operating systems, communication systems, Internet applications, database management systems, or networks, etc.
Systems Administrator (AD)	Installs operating systems, software, database management systems software, compilers, and utilities. Monitors and tunes systems software, peripherals, and networks. Installs new users, creates batch administration scripts, and runs systems backups. Resolves systems problems.
Computer Operator (CO)	Performs tasks associated with operational computing and peripheral equipment in accordance with the workload, services, priorities, and deadlines as defined in the daily production/testing schedule.

Table 2.1: IT Job Families (Slaughter et al., 2007)

A significant feature of the IT profession is the continually changing context of IT work. In recent years dynamics such as IT outsourcing, the use of contractors, the move towards global delivery of IT services and new technologies have all had an impact on the IT professional's work environment. Emerging technologies and methodologies like mobile computing, cloud computing, big data analytics and social media and agile development also have significant implications for IT work (Slaughter et al., 2007). Many of these developments in technology have led to the creation of new job roles such as cloud architects, mobile application developers and data scientists. Data scientists analyse large quantities of unstructured data such as social media posts to identify patterns, for example consumer behaviour trends or customers' opinions on products or services (Ang, Joseph and Slaughter, 2015). This information can be of great value to organisations in today's highly competitive market.

Much like other established professions, a distinct occupational culture exists in the IT field which is exhibited through different forms, ideologies and behaviours. Guzman and Stanton (2009) established that IT workers formed a distinctive occupational culture and that this culture extends beyond the organisations where they are employed. Their findings suggest that this IT occupational culture was characterized by inter alia, the high value of technical knowledge, working long and irregular hours, a constant need to re-skill and a lack of formal work rules.

IT workers often experience work-life conflict and burnout (Messersmith, 2007). Burnout is described as '*an extreme state of psychological strain and depletion of energy resources arising from prolonged exposure to stressors that exceed the person's resources to cope*' (Cooper, Dewe and O'Driscoll, 2001, p. 84). Pawlowski, Kaganer and Cater (2007) identified three outcomes of burnout, namely reduced job performance, workers moving to another job or profession and reduced physical well-being. As a result staff turnover increases, productivity is reduced and the general health of workers deteriorates (Huarng, 2001). In their research on stress, Idler and Kasl (1991) found that high levels of burnout in workers could lead to chronic illnesses like high blood pressure and recurring headaches. A study of work-related wellness of IT professionals in South Africa showed that IT workers suffering from burnout also demonstrated reduced levels of psychological well-being, resulting in low satisfaction with their life in general. The author

suggests that the IT industry should try to combat the prevalence of unwellness amongst IT workers by designing and implementing suitable interventions (Westerman, 2005).

2.7 Telework and IT workers

The global shortage of skilled workers within the IT profession means that a degree of competition exists amongst organisations for this limited pool of resources (Siha and Monroe, 2006). In South Africa a high exodus of knowledge workers such as IT professionals and a growing skills gap has compounded this problem (Chipunza and Kabungaidze, 2012). This fact, coupled with high employee turnover in the IT profession, creates a challenge for organisations that need to attract and retain these skills workers in order to remain competitive.

One explanation for the high turnover in the profession may be that IT workers are more prone to experiencing work-life conflict, high levels of stress and burnout than workers in other functional areas (Messersmith, 2007). According to Demarco (2002) modern organisations tend to focus on having employees busy 100% of the time which leads to burnout, high staff turnover and general inefficiency. Telework has proven its effectiveness in this area by decreasing staff turnover and increasing loyalty to the organisation (Sharit et al., 2009). IT professionals have indicated that spending more time with family, the reduction of travel time and flexible working hours are important reasons for considering teleworking (Beasley and Lomo-David, 2000). Female IT workers, in particular, can benefit from teleworking as they experience pressures in managing family responsibilities, which impact on their voluntary turnover intentions (Armstrong, Riemenschneider, Allen and Reid, 2007). Smith and Speight (2006) suggest that organisations can reduce IT employee turnover by considering the individual wants of their employees, such as greater autonomy or better lifestyle integration. Greater autonomy enables employees to structure their own work in ways that can improve employee motivation and job satisfaction (Carolissen and Smith, 2014). Telework has the potential to achieve these goals for IT workers (Thompson and Aspinwall, 2009).

2.8 South African Telework Research

An online search for peer-reviewed articles on telework in South Africa published since 2000 identified only seven articles, as shown in Table 2.2.

Year	Author	Title	Publication
2014	Tustin	Telecommuting Academics Within an Open Distance Education Environment of South Africa: More Content, Productive, and Healthy?	*The International Review of Research in Open and Distributed Learning*
2014	Van der Merwe & Smith	Telework: Enablers and Moderators when Assessing Organisational Fit	*Proceedings of the Southern African Institute for Computer Scientist and Information Technologists Annual Conference 2014*
2010	Baard and Thomas	Teleworking in South Africa: Employee benefits and challenges	*SA Journal of Human Resource Management*
2004	Nortjé, Van Brakel, and Rensleigh	Information environment of teleworkers in South Africa	*SA Journal of Human Resource Management*

2003	Langa and Conradie	Perceptions and attitudes with regards to teleworking among public sector officials in Pretoria	*Communicatio: South African Journal for Communication Theory and Research*
2002	Odendaal and Roodt	Australian and South African perspectives on the implementation of flexible work practices (fwp): an exploratory study	*SA Journal of Industrial Psychology*
2002	Hoffman	Information and communications technology, virtual offices and telework	*South African Journal of Information Management*

Table 2.2: Published Articles on Telework in South Africa (2000-2016)

Out of the papers listed above, the articles by Baard and Thomas (2010) and Langa and Conradie (2003) initially appeared to have a similar focus as this study. Closer examination, however revealed some important differences:

- Baard and Thomas (2010): This quantitative study focused on the perceptions of employees and was limited to three organisations that had well established telework policies.
- Langa and Conradie (2003): In this quantitative study, the authors applied the Technology Acceptance Model (TAM) to study the perceptions and attitudes of public sector officials towards telework.

The researcher could not find any previous telework research papers that specifically targeted IT workers in the South African context.

2.9 The Research Gap

There are several reasons for engaging with this research. In the literature reviewed, telework adoption is discussed mainly within the context of organisations and the public sector. Few studies were found to examine the adoption of telework by employees (Boell et al., 2013). Earlier research in the IS discipline reveal positive as well as negative outcomes of teleworking and findings are often ambiguous and contradictory (Gajendran and Harrison, 2007). Most research at the individual level focused on the benefits and challenges of telework, often examining issues such as work-life benefits and productivity individually. Furthermore, many researchers studied teleworkers as a homogenous group and few considered adoption specifically in relation to IT workers. A multi-dimensional approach is needed in order to identify all the different factors that influence telework adoption behaviour and how they are interrelated (Turetken et al., 2011).

A common assumption found in the literature is that telework is beneficial to workers and that, given the opportunity, the majority of workers would adopt it. This view is often based on the perceptions and attitudes of non-teleworkers who have no actual experience in this area. In this study data was collected from South African IT workers (both teleworkers and non-teleworkers) from a variety of industries. Studying the adoption patterns of workers in an environment where

telework is permitted should provide useful insights into the real reasons for the low adoption rates amongst IT workers. As previously mentioned, very few studies have been done on telework in the South African context. The research should therefore contribute to the limited body of knowledge on telework in South Africa in particular, as well as to the IT profession in general.

2.10 Summary

This review covered several common themes found within the field of telework research. It also delved into conceptions of the IT worker and the IT profession as discussed in the literature thus providing context for this research and highlighting the relationship that exists between telework and IT workers. Three different perspectives on telework emerged from the literature namely societal, organisational and individual, mainly detailing the potential advantages and disadvantages of telework. Previous research focused on determining which gender participates most in telework was largely inconclusive. Regarding age, young people did not identify telework as an important factor in job selection and telework was generally considered to be beneficial to older workers. The literature highlighted a close relationship between technology and telework and identified it as a key enabler of telework.

Society acts as both a driver and a beneficiary of telework practices. Some societal factors driving the adoption of telework include the need to reduce traffic congestion and associated pollution, the need to reduce energy consumption and the increase in knowledge work. Although teleworking can reduce travel and alleviate pressure on the roads in the short term, long term results are less definitive. Potential benefits of telework for organisations include higher employee productivity, lower staff turnover and cost savings. Management resistance, conflicting organisational culture and the challenge of coordinating activities between the office-based and remote workers are some of the problems associated with telework. Important success factors for telework include the compatibility of job functions and management styles with remote work as well as organisational support in the form of telework policies, training for teleworkers and the provision of ICT equipment. From the individual perspective, the quest for a better work-life balance, more work flexibility and reductions in commute time are key drivers of telework amongst workers. Social and professional isolation and conflict between work and home life are two major drawbacks of telework discussed in the literature.

Organisations require skilled IT workers in order to achieve business objectives. However, IT workers are prone to experiencing work-life conflict and burnout, resulting in high staff turnover in the IT profession. IT workers stand to benefit from participating in telework programs, thus it is important to gain a better understanding of the factors that influence their adoption of this style of work. Few telework studies have been conducted within the South African context. This study aims to make a contribution towards addressing this gap in the literature.

In reviewing the literature, a number of theoretical approaches to the study of adoption behaviour were observed. These are examined in the next chapter.

Chapter Three: Theoretical Background

As previously established, a strong link exists between ICTs and telework with ICT infrastructure and tools being key enablers of telework (Siha and Monroe, 2006). From the literature, telework was also found to be most suitable for knowledge work such as the IT profession (Golden, 2007). Considering the relationship between ICTs and telework, it may be beneficial to examine telework adoption using techniques found in IT innovation adoption research. In this chapter, a few common theories used in past IT adoption research are considered before introducing and explaining the theoretical model chosen for this study.

3.1 IT Innovation Adoption Research

The aim of ICT innovation research is to understand the factors that impact on the adoption and diffusion of ICT innovations, either positively or negatively (Fichman, 2004). Adoption theory provides a way to study the choices made to either accept or reject a specific innovation. Diffusion theory looks at how an innovation spreads over time in a given community. The adoption process can be viewed as the decision to assimilate the innovation whereas diffusion is the collective adoption process over time (Straub, 2009). In their study of ICT innovation adoption Jeyaraj, Rottman and Lacity (2006) identified a set of predictors of ICT adoption which can be applied to studies of ICT adoption by individuals. The main predictors of individual IT adoption were found to be top management support, computer experience, perceived usefulness, behavioural intention and user support, as illustrated in Figure 3.1 (Jeyaraj et al., 2006).

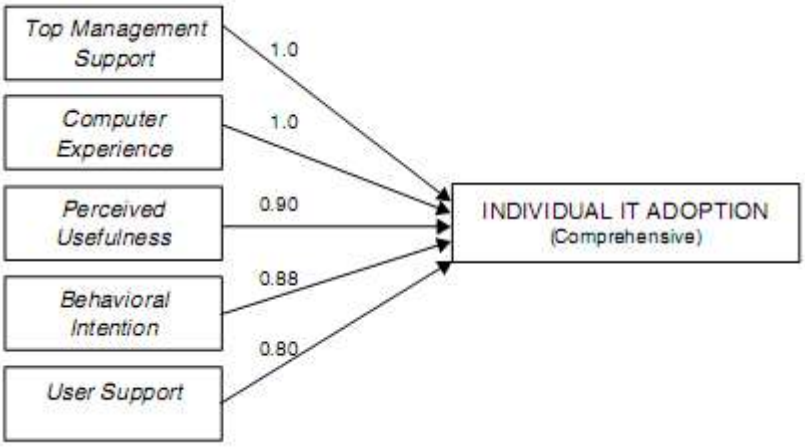

Figure 3.1: Best predictors of IT adoption by individuals (Jeyaraj et al, 2006)

Jeyaraj et al., (2006) also identified several theories that have been used in IT adoption research (see Table 3.1).

Theory	*Main author(s)*
Innovation Diffusion Theory	Rogers (1983, 1995)
Perceived Characteristics of Innovations	Moore and Benbasat (1991)
Social Cognitive Theory	Bandura (1986)
Technology Acceptance Model	Davis (1989)
Technology Acceptance Model II	Venkatesh *et al.* (2003)
Theory of Planned Behavior	Ajzen (1991)
Theory of Reasoned Action	Fishbein and Ajzen (1975)
Unified Theory of Acceptance and Use of	Venkatesh *et al.* (2003)

Table 3.1: Common theories used in IT innovation adoption research (Jeyaraj et al, 2006)

The adoption of, or intention to adopt an innovation is a typical focus of these theories. The Theory of Reasoned Action (TRA), for example, is concerned with predicting the *behavioural intention* of individuals (Fishbein and Ajzen, 1975) and the Diffusion of Innovations Theory is more focused on actual adoption *behaviour* (Rogers, 1983). The common denominator between the different theories is that they largely posit that **beliefs** have an effect on **attitudes**, which influence **behavioural intentions**, which in turn impact on **behaviour** By far the most commonly used theory in researching IT innovation adoption is the Technology Acceptance Model (Jeyaraj et al., 2006).

3.2 The Technology Acceptance Model (TAM)

TAM was derived from the Theory of Reasoned Action - a theory used in social psychology to explain different human behaviours. TAM introduced the concepts of *Perceived Ease of Use* and *Perceived Usefulness* as important determinants of the intention to adopt technology (Davis, Bagozzi and Warshaw, 1989). Davis defined Perceived Usefulness as "…*the degree to which a person believes that using a particular system would enhance his or her productivity*" and Perceived Ease of Use as "...*the degree to which a person believes that using a particular system would be free of effort*" (Davis et al., 1989, p.320). TAM has been empirically proven to have high validity (Taylor and Todd, 1995).

3.3 The Theory of Planned Behaviour (TPB)

One of the most influential theories in explaining and predicting behaviour is the Theory of Planned Behaviour (Sheppard, Hartwick and Warshaw, 1988). Similar to TAM, it has its roots in the Theory of Reasoned Action. Ajzen (1991) introduced the variable *perceived behavioural control* as an extension of the TRA, in order to account for the claim that behaviour is not entirely voluntary. The TPB posits that attitude, subjective norms and perceived behavioural control are direct determining factors of behavioural intention, which in turn affects behaviour (see Figure 3.2). Several studies have demonstrated that TPB can predict behaviour by using the decision makers' attitude toward the behaviour, the subjective norms of the decision maker, and the decision makers' perceived control over the behaviour as predictors (Ajzen, Joyce, Sheikh, and Cote, 2011).

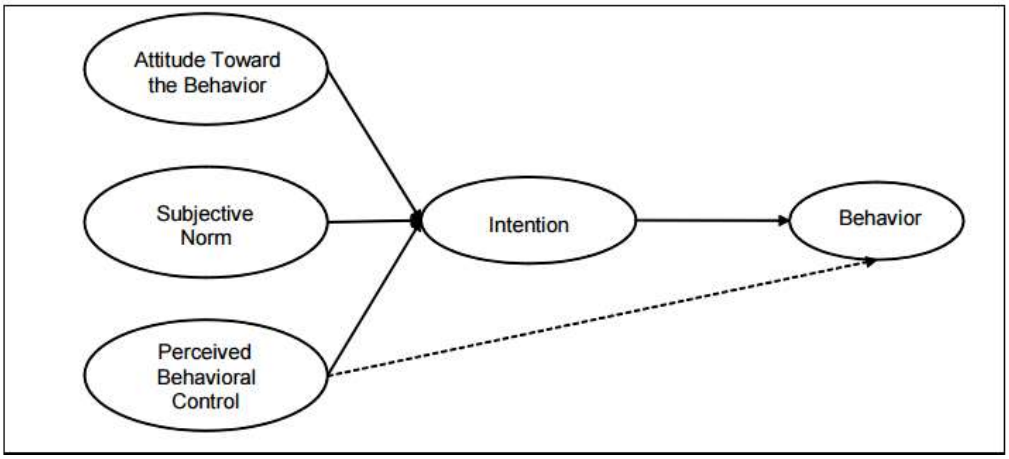

Figure 3.2: The Theory of Planned Behaviour model (Ajzen, 1991)

Attitude Towards the Behaviour reflects feelings of favourableness or unfavourableness that a person has about performing a certain behaviour. *Subjective Norms* refers to the perceptions of social pressure from superiors, peers or other significant persons to either perform or not to perform a behaviour. *Perceived Behavioural Control* is defined as "*…people's perception of the ease or difficulty of performing the behaviour of interest*" (Ajzen, 1991, p. 183). This construct reflects an individual's perceptions of the constraints on performing a behaviour (Ajzen, 1991). The above determinants of intention are, in turn, determined by underlying beliefs, i.e. attitudinal beliefs, normative beliefs and control beliefs respectively.

A major strength of the TPB is that it can be applied in many different contexts, to study a variety of behaviours (Ajzen, 2011). Davis et al. (1989) and Mathieson (1991), however contended that TAM was better than TPB at explaining usage intention, due to its well developed and validated measures of perceived ease of use and usefulness.

3.4 The Decomposed Theory of Planned Behaviour

In this model, additional measures are incorporated into the TPB to better understand attitude, subjective norms and perceived behavioural control and their role in determining behavioural intention. Decomposing these constructs into specific belief dimensions enables them to be more completely explored. By identifying key beliefs that could affect behavioural intention, such as perceived ease of use, peer influence and self-efficacy, the decomposed TPB model should offer a more complete understanding of usage intention. The decomposed TPB is therefore preferable to the pure TPB model, due to the former's increased explanatory power (Taylor and Todd, 1995).

The decision to telework is subject to significant constraints and external influences, which have a significant impact on its adoption by individuals. These social and control factors are not present in TAM, which assumes that perceptions about usefulness and ease of use are the main determinants of usage (Ajzen 1991). The TPB has proven its value in explaining these constraints and influences, through the measures of perceived behavioural control and subjective

norms, respectively. On the other hand, TAM has proven its value in capturing specific salient beliefs that have an influence on adoption. By incorporating variables from TAM, the decomposed TPB can be seen as a "best of both" model (Taylor and Todd, 1995).

3.5 The Decomposed TPB Model for Telework

Khalifa and Davison (2008) used the Decomposed TPB as the foundation for developing a model specific to telework research (see Figure 3.3).

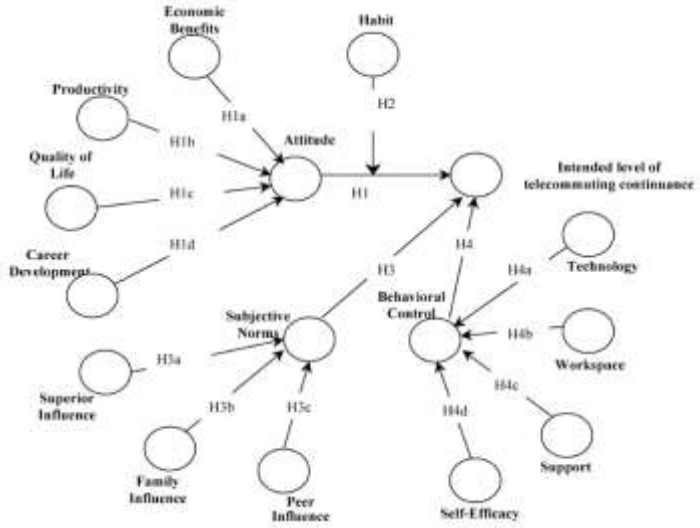

Figure 3.3: The Decomposed Theory of Planned Behaviour for Telework model (Khalifa and Davison, 2008)

They applied this model in a study of the intended continuance level of teleworkers. The model was adapted to the current study by excluding the Habit construct, based on the current study's focus on telework adoption (versus continuance). The Job Compatibility construct was added to the model as another determinant of Perceived Behavioural Control, based on the results of the independent literature review (see figure 3.4). The main constructs of the model are attitude, subjective norms, perceived behavioural control and behavioural intention, which are further decomposed to incorporate a number of antecedents that were identified in the belief elicitation part of the study done by Khalifa and Davison (2008).

3.5.1 Attitude

Previous studies have established that the intention to telework is positively influenced by an individual's attitude towards telework. A key determinant of attitude is perceived usefulness (Davis et al., 1989). A similar construct, *perceived consequences* is used in this model - it is considered to be more neutral than perceived usefulness since consequences can be positive or negative (Khalifa and Davison, 2008). Four consequences of teleworking were identified in the belief elicitation interviews, namely economic benefits (H1a), productivity (H1b), quality of life (H1c) and career development (H1d). These factors were found to be consistent with the literature.

3.5.2 Subjective Norms

According to Karahanna, Straub and Chervany (1999), subjective norms are even more important than attitude in explaining adoption intention. Within the telework context, this construct encapsulates the social factors that influence an individual's intention to telework. Social factors include interaction with colleagues, superiors and family members in the form of comments, suggestions or directives. Three key factors were identified for the subjective norms construct, namely superior influence (H3a), family influence (H3b) and peer influence (H3c). These factors are also supported by the literature.

3.5.3 Perceived Behavioural Control

In this study, the Perceived Behavioural Control construct is focused on the IT worker's perception of the availability of resources, skills and opportunities needed to telework. The factors of self-efficacy, support, workspace and technology are included as antecedents of perceived behavioural control in the model. In the telework setting, self-efficacy (H4d) refers to the level of confidence that individuals have in their ability to be effective while working independently at a remote location. In the literature, self-efficacy is found to be critical to telework intention, while the availability of communications technology (H4a) showed a positive impact on workers' perceptions of productivity and performance when teleworking. Teleworkers need a suitable work space for performing remote work (H4b) as well as technical and non-technical support (H4c) (Khalifa and Davison, 2008). The suitability of job roles and daily work tasks for telework was a frequently occurring theme encountered in the review of the literature. The compatibility of jobs was commonly considered to be a critical success factor and practical requirement for the adoption of telework. For this reason, job compatibility (H4e) was added as a fifth antecedent of perceived behavioural control.

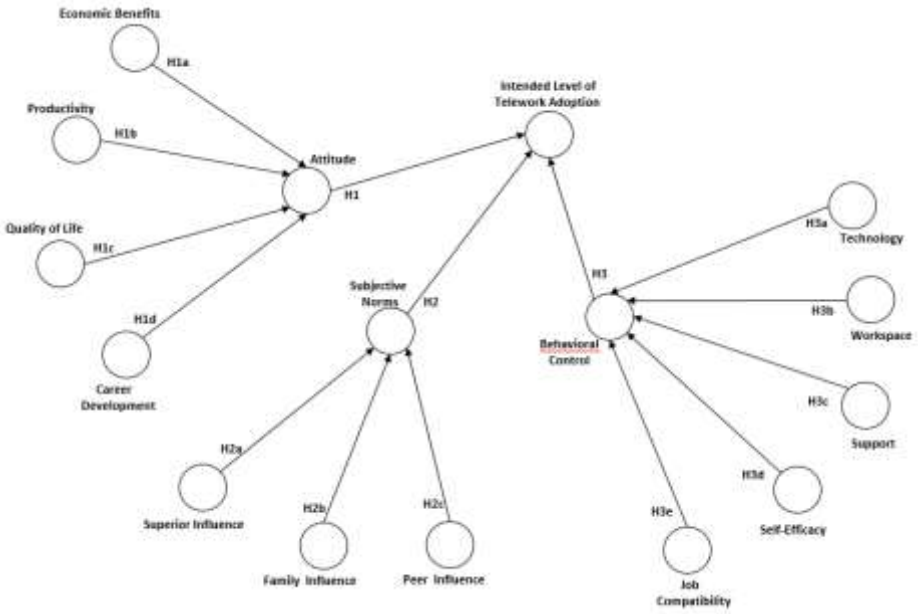

Figure 3.4: The Theoretical Model (Adapted from Khalifa and Davison, 2008)

3.6 Summary

Theories commonly used in IT adoption research, such as the TRA, TAM and the TPB were briefly discussed in this chapter, whereafter the chosen theoretical model was explained. The objective of the study was to explore the underlying factors in IT workers' intention to engage in telework. The TPB is appropriate for this research as it is capable of capturing individual beliefs, relevant social pressures as well as internal and external inhibitors to adopting telework. The chosen model further decomposes the constructs of the TPB and incorporates telework-specific determinants for attitude, subjective norms and perceived behavioural control. This model should therefore have more explanatory power and provide better results than either TAM or the TPB in its pure form. Its foundations in the TPB and TAM gives the model substantial validity.

Based on the model, a set of hypotheses was developed (see Table 4.1).

Hypothesis	Statement
H1	**There is a significant positive relationship between attitude and the intention to adopt telework**
H1a	There is a significant positive relationship between economic benefits and attitude
H1b	There is a significant relationship between productivity and attitude
H1c	There is a significant positive relationship between quality of life and attitude
H1d	There is a significant positive relationship between career development and attitude
H2	**There is a significant positive relationship between subjective norms and the intention to adopt telework**
H2a	There is a significant positive relationship between superior influence and subjective norms
H2b	There is a significant positive relationship between family influence and subjective norms
H2c	There is a significant positive relationship between peer influence and subjective norms
H3	**There is a significant positive relationship between perceived behavioural control and intention to adopt telework**
H3a	There is a significant positive relationship between technology and perceived behavioural control
H3b	There is a significant positive relationship between workspace and perceived behavioural control
H3c	There is a significant positive relationship between support and perceived behavioural control
H3d	There is a significant positive relationship between self-efficacy and perceived behavioural control
H3e	There is a significant positive relationship between self-efficacy and perceived behavioural control

Table 3.2: The Hypotheses to be tested

Each of the above hypotheses were tested using the data collected from the participants of the survey, as discussed in Chapter 5 (Data Analysis and Findings). The data collection methods that were used are discussed in the next chapter, along with other aspects of the research design.

Chapter Four: Research Design

This chapter explains the approach, methodology and strategy that were followed in conducting the research. It includes discussions of the research instrument, sampling methods used as well as the data collection and analysis techniques that were chosen for this study. Any issues related to ethics, confidentiality and privacy as well as potential limitations of the research are also discussed.

4.1 The Research Methodology

The research followed an explanatory approach using quantitative data collection and analysis methods to study factors that influence telework adoption amongst IT workers in South Africa. An explanatory research approach is best suited for establishing fundamental relationships between different variables, as in the case of this study (Saunders, Lewis and Thornhill, 2009). *Positivism* promotes the idea of a measurable and observable objective reality (Saunders et al., 2009). A positivistic philosophy was adopted, as the aim of this study was to objectively measure and predict the factors that influence the telework adoption intention of individuals. Since this research attempted to find quantifiable data to answer the research question, the positivist philosophy is justified. An existing theoretical model was identified and was adapted for this research, thus deductive methods were used to answer the research question and achieve the research objectives.

An online survey was conducted, using a questionnaire as the instrument for data collection. The questionnaire was administered to a selected sample of IT workers - the sampling method is explained in the next section of this paper. The survey strategy is usually associated with the explanatory approach and deductive research methods and is therefore appropriate for this study (Saunders et al., 2009). Other data collection techniques such as interviews were not considered due to the limited time frame of this study. This limited available time window also dictated that a cross-sectional view of the data would be taken over a single data collection period for the survey.

4.2 The Research Instrument

The question set developed by Khalifa and Davison (2008), was used as the basis for compiling a questionnaire. Data was collected via an online survey using Qualtrics. This quantitative method of collecting data is suitable to this study since it allows for a large amount of data to be collected from a number of IT workers in different organizations and locations. Using a questionnaire, data can be collected in a highly economical manner and over a relatively short period of time. The data obtained from the questionnaire is standardised and allows for easy comparison between different respondents (Saunders et al., 2009). The data collected can then be analysed easily using statistical tools. Surveys are generally perceived as being authoritative and are relatively easy to explain and understand. The data collected using a survey strategy can also

be used to suggest possible reasons for particular relationships between variables and to produce models of these relationships. Once the survey data has been collected, the researcher can work independently to analyse and report on the data. This gives the researcher more control over the research process and avoids the delays often experienced with other data collection methods where there is a dependence on third parties for information (Saunders et al., 2009).

4.2.1 Structure of the questionnaire

The questionnaire was divided into three sections:

Section 1 of the questionnaire consisted of ten question items that were used to collect information on the profile of the respondents, including gender, age and number of dependents (see Table 4.1). This information was assumed to be useful in obtaining additional data on the survey participants whilst enabling further insights and analysis if required.

Section 1 – Respondent Profile Information		
Information Requested	**Question Number**	**Data Type**
Demographic Information Gender, Age group, Number of dependents, Occupation, Work Experience, Length of daily commute, Primary means of commuting	1-10	Nominal, Ordinal

Table 4.1: Structure of the questionnaire – Section 1

Section 2 consisted of forty-two question items that were designed to test each of the hypotheses (see Table 4.2).

Section 2 – Telework Adoption		
Information Requested	**Question Number**	**Data Type**
Current level of telework adoption Current number of teleworking days, Current proportion of telework	11 - 14	Ordinal
Intended future level of telework adoption Intended future number of teleworking days, Future proportion of telework	15 - 16	Ordinal
Attitude Economic Benefits, Productivity, Quality of Life, Career Development	17 - 30	Ordinal (7-point Likert scale)
Subjective Norm	31 - 40	Ordinal

Superior Influence, Family Influence, Peer Influence		(7-point Likert scale)
Perceived Behavioural Control Job Compatibility, Self-efficacy, Support, Workspace, Technology	41 - 53	Ordinal (7-point Likert scale)

Table 4.2: Structure of the questionnaire – section 2

Each question was linked to one of the constructs of the research model and question items were grouped accordingly. A 7-point Likert scale was used to measure responses for this section, with the scale ranging from *strongly agree* to *strongly disagree*. According to Matell and Jacoby (1971), the number of items on a Likert scale has little effect on the reliability and validity of the data collected. The seven point Likert scale was preferred because it makes provision for a neutral response ("*neither agree nor disagree*") if a respondent is undecided on any of the questions, while allowing respondents to choose a response that more accurately represents their views (e.g. *strongly agree, agree, somewhat agree*) than with a 5-point scale (Matell and Jacoby, 1971).

Each construct of the framework formed a subset of questions for the questionnaire. For example, the following questions formed part of the "Quality of Life" construct:

> *Quality of Life 1*: Telecommuting has improved the quality of my work life.
> *Quality of Life 2*: Telecommuting has improved the quality of my family life.
> *Quality of Life 3*: Telecommuting has improved the quality of my social life.
>
> (Khalifa and Davison, 2008)

Section 3 consisted of three open questions that were used to capture additional information and opinions from respondents (see Table 4.3).

Section 3 – Open Questions		
Information Requested	**Question Number**	**Data Type**
Other influences, external factors, drivers and inhibitors of telework	54 - 56	Free form text

Table 4.3: Structure of the questionnaire – section 3

The use of open questions allows participants to describe a situation and can be used to reveal attitudes (Saunders et al., 2009). Data obtained from this section could be used to support the results of the quantitative data analysis and to identify other factors that were not captured by

the preceding set of questions. The following open questions were included in this section of the survey:

- *Can you think of any other influences such as external factors that may affect your decision to work remotely?*
- *What would you describe as your greatest drivers for the use of remote work arrangements?*
- *What are the biggest detractors or inhibitors for you to work remotely?*

The full questionnaire is attached to this paper as Appendix A.

4.3 Sampling

The research was focused at the level of the individual IT worker and aimed to evaluate the responses of IT professionals in different organisations regarding the factors that influence their intention to adopt telework. Since the population for this study potentially included all IT workers in South Africa, a small representative sample was taken for inclusion in the study. By using sampling, it is possible to generate findings that are representative of the whole population at a lower cost and in a shorter time frame than collecting the data for the whole population (Saunder et al., 2009). A minimum of one hundred responses was considered to be the minimum requirement to enable tests such as factor analysis and for producing statistically significant results (Hair, Anderson, Babin and Black, 2010). This target was achieved with a total of 120 valid responses being received.

The initial sample consisted of IT professionals who were employed by IT service providers in South Africa. A number of IT service providers were contacted via email to request the participation of their staff in the survey. In order to ensure that a representative sample was taken, an attempt was made to include IT professionals working in local South African companies as well as those working for international companies (based in South Africa). Favourable responses were received from five of the IT service providers, of which two were local companies and three being international IT companies.

Telework is applicable to any organisation wishing to make use of flexible work arrangements and is not limited to a particular type of organisation (Campbell and McDonald, 2007). For this reason, IT workers working in different industries were also targeted for inclusion in the sample. A non-probability convenience sampling approach was used to select these participants. The IS departments of five South African universities were contacted in order to obtain a list of former students to participate in the survey. Four of the universities declined participation. An email list was obtained from one university in Cape Town and these former IS students were contacted via email and requested to participate in the survey. A link to the survey was also posted in an online article on the ITWeb website (www.itweb.co.za) in an attempt to obtain participation from IT workers from different parts of South Africa. This approach yielded a total of 38 responses.

Snowball sampling was used in order to identify further potential participants. All of this was done to ensure that the sample was representative and that the survey results could be generalised to the greater population (Saunders et al., 2009).

4.4 Validation of the Research Method

In addition to ensuring a representative sample, a piloting exercise was conducted using ten candidates to test the questionnaire and to ensure a good response rate from the sample selected. Feedback was obtained from these pilot candidates on the design of the individual questions, the user friendliness of the survey as well as the general layout of the questionnaire. A few participants indicated typing errors in the survey and the feedback was generally positive. The questionnaire was reviewed and modified based on the feedback received.

As previously discussed, this questionnaire is based to a large extent on question items from a previous study by Khalifa and Davison (2008), which were in turn, based on earlier research (Thompson, Higgins and Howell, 1991; Bergeron, Raymond, Rivard and Gara, 1995; Taylor and Todd, 1995). The advantage of this approach is that the constructs and test items used have already been validated, which contributes to the validity and credibility of the research instrument. The questionnaire was checked and approved by the UCT Ethics in Research Committee of the Commerce Faculty.

4.5 Data Collection and Analysis

The survey was made available to participants over a period of approximately six weeks through the Qualtrics online survey service. Potential participants were contacted via email to request their participation in the survey. This email included a covering letter explaining the purpose of the research (see Appendix B).

The information collected was used and managed as described in the next section entitled Ethics, Confidentiality and Privacy. The quantitative data collected was analysed using the statistical analysis tool Statistica 13. The survey data was exported from Qualtrics in Excel format and imported into Statistica for analysis. The software was initially used to generate descriptive statistics and display to the data in different formats and graphs such as histograms and scattergrams, with the aim of identifying relationships between different variables and constructs.

Reliability and Items analysis was then performed on the data collected to test the reliability of question items (Cronbach-Alpha) as well as Factor Analysis to confirm the internal validity of constructs. Multiple regression analysis, correlation analysis and t-tests were used to test each of the hypotheses. The results of the data analysis and the subsequent research findings are discussed in the next chapter.

4.6 Ethics, Confidentiality and Privacy

As mentioned, approval was obtained from the Faculty of Commerce Ethics in Research Committee before the commencement of this research project. The completed ethics approval application form is attached as Appendix C. All research was done with careful consideration of the rights of the participants and of the companies they work for. To ensure the confidentiality of the information collected and to protect the privacy of survey participants, the following steps were taken:

- A cover letter was sent to all survey participants explaining the purpose of the research.
- Participation in the research was completely voluntary and no one was obliged to participate in the survey.
- All responses were anonymous and no personal details were required of respondents. Participants were allowed to voluntarily provide their email addresses if they required a copy of the research findings.
- All company and personal information was treated as strictly confidential at all times. All reasonable efforts were made not to disclose the identity of any individual or company related to this study.

The researcher honoured these statements to ensure that the privacy and confidentiality of the respondents were respected and that the necessary ethical considerations were adhered to. The final research report will be provided to those participants that requested it.

4.7 Potential Limitations of the Research

Limitations of this study that should be taken into account relate to the sample size, time restrictions, and researcher bias. Due to the cross sectional time frame of the study, any changes that occur within the teleworking environment of the survey respondents could not be observed over time. The limited time period that is available for collecting the data potentially limited the number of responses received to the survey (Saunders et al., 2009). There is a limit to the number of questions that any questionnaire can contain therefore the data collected via the survey strategy is unlikely to be as wide-ranging as those collected by using other research strategies. A lack of participation by IT workers due to privacy fears or a lack of interest were potential risks identified for the survey. These potential stumbling blocks were addressed through clear communication with all participants about the purpose of the survey and by providing assurances regarding the anonymity of responses. A level of bias is introduced into the study since the researcher is an active teleworker employed by an international IT company with established teleworking policies. As a result, a degree of confirmation bias may exist. Personal bias was addressed by using a large research sample and by triangulating the findings of the study using qualitative methods and supporting literature.

4.8 Summary

The research was explanatory in nature and followed a deductive approach in answering the research question "What factors influence South African IT workers' intention to telework?". An online survey was chosen as the research instrument and a set of questions was compiled based on an existing theoretical model. Both quantitative and qualitative data analysis techniques were used to analyse the data collected from a representative sample of IT workers working in a number of organisations in South Africa. Limitations of the research include a relatively small sample size and the limited timeframe of the study.

Chapter Five: Data Analysis and Findings

This chapter starts by providing an overview of the survey results, including a profile of the respondents, observations on telework adoption levels amongst the IT workers surveyed and a summary of the data collected. This is followed by a review of the reliability and validity tests that were performed on the data, whereafter the results of the quantitative and qualitative analyses are detailed. The findings of the research are then presented.

5.1 Respondent Profile

In order to understand the profile of the IT workers who participated in the survey, respondents were asked to provide some demographic information. The data on respondents' occupation was useful in confirming that only IT workers had participated in the survey. No questions on the geographical location of respondents were included in the initial phase of the survey, however in the ITWeb survey, respondents were asked to provide their location. The location data from this survey indicated that 34 respondents were based in Johannesburg. As no information was available on the participants' location in the initial phase of the survey, the location data was not used in any further analysis.

The demographic profile of the respondents is reflected in Table 5.1.

Demographic	Category	Frequency	Percentage
Gender	Male	79	65.8
	Female	41	34.2
Age Group	Under 30	17	14.2
	30 - 40	70	58.3
	41 - 50	25	20.8
	Over 50	8	6.7
Number of children at home	0	50	41.7
	1	33	27.5
	2	31	25.8
	3	6	5
	More than 3	0	0
Number of children at home during working hours	0	82	68.3
	1	23	19.2
	2	14	11.7

	3	1	0.8
	More than 3	0	0
Occupation	Software Developer	17	14.2
	Application/Systems Administrator	5	4.1
	IT Specialist	23	19.2
	Support Technician	6	5
	IT Management	32	26.7
	Other (Project Management, IT Sales, IT Risk Advisor…)	37	30.8
Industry Sector	Manufacturing	0	0
	Retail	6	5
	Finance	17	14.2
	Government/Public sector	4	3.3
	IT Vendor/Service Provider	74	61.7
	Other (Telecommunication, Oil and Gas, Healthcare,etc)	19	15.8
Years of experience in IT profession	Less than 1 year	4	3.4
	1 – 5 years	8	6.7
	5 – 10 years	28	23.3
	10 – 15 years	31	25.8
	More than 15 years	49	40.8
Number of years with current employer	Less than 1 year	20	16.7
	1 – 5 years	35	29.1
	5 – 10 years	38	31.7
	10 – 15 years	19	15.8
	More than 15 years	8	6.7

Table 5.1: Demographic profile of respondents

The demographic data revealed that the sample was reasonably representative of the population of IT workers as it included male and female respondents (65.8% and 34.2% respectively), different age groups, a variety of occupations and industry sectors as well as various levels of work experience within the field of IT. IT service providers were specifically targeted in the survey and this was reflected in the number of respondents who were employed by IT companies (61.7%). More than half of the survey participants (58.3%) were between thirty and forty years

old, 41.7% had no children living with them and a total of 68.3% also had no children at home during working hours.

5.1.2 IT Worker Commute Data

Respondents were asked to provide information on their daily commute times and modes of transport. The data indicated that 42.5% of respondents spent an hour or more daily (on average) commuting between home and the office, with most (88.3%) using their own transport for this purpose (see Table 5.2).

Measure	Category	Frequency	Percentage
Total Daily Commute Time	Less than 30 min	26	21.7
	30 - 60 min	43	35.8
	60 - 90 min	32	26.7
	More than 90 minutes	19	15.8
Primary means of travel	Public Transport	11	9.2
	Own Transport	106	88.3
	Walking	3	2.5

Table 5.2: IT Worker Commute Data

5.1.3 Telework Adoption Data

Regarding formal telework policies, 51.7% of respondents indicated that these were in place at their place of work, however only 28.3% knew how long the policy had been in existence. Respondents were also required to state their current teleworking activities by specifying both the frequency of telework (average number of days per week) and proportion of their job done remotely. The data showed that 20% of respondents did not participate in any telework activities, while a further 36.6% did so for less than one day per week (on average). Only 25% of respondents performed more than half of their job functions away from the office. A summary of the telework adoption data is provided in Table 5.3.

Measure	Category	Frequency	Percentage
Formal Teleworking policy	Yes	62	51.7
	No	39	32.5
	I'm not sure	19	15.8
How long Telework policy has been in place	I don't know/ Not Applicable	76	63.4
	Less than 1 year	1	0.8
	1 – 5 years	25	20.8
	5 – 10 years	8	6.7
	More than 10 years	10	8.3
Current Telework frequency (per week)	None	24	20
	Less than 1 day	44	36.6
	1 – 2 days	21	17.5
	2 – 3 days	9	7.5
	3 – 4 days	5	4.2
	4 – 5 days	12	10
	More than 5 days	5	4.2
Current Telework proportion	None	11	9.2
	Less than 10%	34	28.3
	10 – 30%	33	27.5
	30 – 50%	12	10
	50 – 70%	7	5.8
	70 – 90%	6	5
	More than 90%	17	14.2
Intended telework frequency	None	17	14.2
	Less than 1 day	27	22.5
	1 – 2 days	40	33.3
	2 – 3 days	8	6.7
	3 – 4 days	6	5
	4 – 5 days	9	7.5
	More than 5 days	13	10.8

Intended Telework proportion	None	13	10.8
	Less than 10%	26	21.7
	10 – 30%	36	30
	30 – 50%	14	11.7
	50 – 70%	11	9.2
	70 – 90%	4	3.3
	More than 90%	16	13.3

Table 5.3: Telework Adoption Data

Based on the previously determined definition of a teleworker (those who work from home at least one day per week), 43.4% of respondents were classified as currently being teleworkers and 56.6% as being non-teleworkers.

5.2 Descriptive Statistics

The question items in the second part of the questionnaire (Questions 11 - 53) were based on the constructs of the research model and were grouped accordingly. A summary of the data for each of the constructs is depicted in Table 5.4.

Variable	***Descriptive Statistics Valid N=120***								
	Mean	***Median***	***Mode***	***Frequency of Mode***	***Minimum***	***Maximum***	***Variance***	***Std.Dev.***	***Skewness***
Telework Adoption Intention	3.500	3.000	3.000	36	1.000	7.000	3.344	1.828	0.687
Attitude	6.013	6.166	7.000	39	1.000	7.000	1.218	1.103	-1.671
Subjective Norms	4.375	4.000	4.000	41	1.000	7.000	2.076	1.441	-0.235
Perceived Behavioural Control	6.195	6.500	7.000	52	1.000	7.000	1.026	1.013	-2.095
Economic Benefits	5.675	6.000	7.000	40	1.000	7.000	1.923	1.387	-1.087
Productivity	5.661	6.000	7.000	38	2.000	7.000	1.776	1.333	-0.885
Quality of Life	5.364	5.667	7.000	22	1.000	7.000	1.625	1.275	-0.768

Career Development	4.325	4.000	4.000	24	1.000	7.000	2.423	1.557	0.038
Superior Influence	3.988	4.000	4.000	35	1.000	7.000	2.540	1.594	-0.121
Family Influence	5.063	5.000	6.000	31	1.000	7.000	2.418	1.555	-0.613
Peer Influence	4.388	4.000	4.000	37	1.000	7.000	1.685	1.298	-0.115
Technology	6.408	7.000	7.000	67	1.000	7.000	0.790	0.889	-2.740
Workspace	5.938	6.000	7.000	46	1.000	7.000	1.607	1.268	-1.889
Support	5.858	6.000	6.000	48	1.000	7.000	1.715	1.310	-1.845
Self-efficacy	6.181	6.333	7.000	53	2.000	7.000	1.167	1.080	-1.874
Job Compatibility	5.754	6.000	7.000	43	1.000	7.000	2.084	1.444	-1.346

Table 5.4: Summary of descriptive statistics

The mean scores for the construct variables were between 3.50 and 6.50 with standard deviations ranging from 0.88 to 1.82. There was a good distribution across each of the constructs, as indicated by the relatively small difference between the means and medians. The data for some variables were not normally distributed as reflected in the Skewness values in the above table.

5.3 Reliability and Validity Tests

Before analysing the data for the constructs, their reliability and validity was verified using item reliability tests (Cronbach's Alpha) and factor analysis respectively.

5.3.1 Reliability Tests

Reliability tests were done for each of the fifteen construct variables to determine how well each group of questions fit together within the construct (the internal reliability) and to highlight any questions items that could be removed from each construct to improve its reliability. Results of the reliability tests are displayed in Table 5.5.

Constructs (Variables)	***Question Items***	***Number of Questions***	***Reliability (Cronbach's alpha)***
Telework Adoption Intention (TWADOP_INT)	Q15 - Q16	2	0.815
Attitude (ATT)	Q28 – Q30	3	0.898
Subjective Norms (SUBJNORM)	Q39 – Q40	2	0.920
Perceived Behavioural Control (BEHCONT)	Q52 – Q53	2	0.773
Economic Benefits (ECONBFT)	Q17 – Q18	2	0.845

Productivity (PRODTY)	Q19 – Q21	3	0.955
Quality of Life (QOL)	Q25 – Q27	3	0.827
Career Development (CARDEV)	Q22 – Q24	3	0.937
Superior Influence (INFL_SUP)	Q35 – Q36	2	0.962
Family Influence (INFL_FAM)	Q37 – Q38	2	0.964
Peer Influence (INFL_PEERS)	Q31 – Q34	4	0.903
Technology (TECH)	Q50 – Q51	2	0.914
Workspace (WRKSPCE)	Q48 – Q49	2	0.991
Support (SUPP)	Q46 – Q47	2	0.992
Self-efficacy (SELFEFF)	Q43 – Q45	3	0.926
Job Compatibility (JOBCOMP)	Q41 – Q42	2	0.869

Table 5.5: Results of Reliability/Item Analysis

An alpha score of 0.6 or above indicates that a construct is reliable. As can be seen in the table, all constructs had high alpha scores and no question items needed to be removed from the data set. The internal reliability of all constructs was therefore considered to be acceptable. A few constructs had very high alphas (over 0.9) which could indicate that respondents found some question items to be somewhat similar.

5.3.2 Validity Tests

Following the reliability tests, the data set was used to perform factor analysis in order to test the validity of each construct. Factor analysis examines the question items for all the constructs and identifies the ones that belong to the same group or factor. It can be used to confirm that questions were designed properly and that the respondents understood the questions. The results of the factor analysis are found in Appendix D, which shows how the question items loaded onto each factor. A total of ten factors were identified, which explained 81.95% of the variance in the sample data. The question items marked in bold red font had factor loadings of 0.6 or higher. Varimax Normalized rotation was used with a minimum Eigenvalue of 1.00.

The question items for Perceived Behavioural Control did not load strongly onto any of the factors, but did show moderate loadings on Factors 2 and 9. Items for Peer Influence had strong loadings on Factors 4 and 8. Only Q25 of Quality of Life loaded strongly onto Factor 10. Q26 and Q27 did not have strong loadings on any factor. A few items loaded onto the same factors as reflected in Table 5.6.

Construct	*Item*	*Factor*
Workspace	WSPACE1	9
	WSPACE2	
Technology	TECH1	
	TECH2	
Job Compatibility	JOB_COMP1	7
	JOB_COMP2	
Self-Efficacy	SELF_EFF1	
	SELF_EFF2	
	SELF_EFF3	
Peer Influence	INFL_FRNDS1	4
	INFL_FRNDS2	
Family Influence	INFL_FAM1	
	INFL_FAM2	
Superior Influence	INFL_SUP1	3
	INFL_SUP2	
Telework Adoption Intention	TWFREQ_INT	
	TWPROP_INT	

Table 5.6: Items loading onto the same factor

All other items loaded correctly onto their individual factors. The correlations between constructs are explored further in the next section.

5.4 Quantitative Data Analysis

All quantitative data analysis was performed using the Statistica 13 statistical analysis software package. As previously mentioned, the data for some variables were not normally distributed. However, due to the fairly large sample size parametric tests were still considered to be appropriate. Multiple regression analysis was used to identify causal relationships between the core constructs of Attitude, Subjective Norms and Perceived Behavioural Control and Telework Adoption Intention and between these constructs and their respective antecedents as reflected in the model. Using correlation analysis, associations were identified between each of the constructs. T-tests were used to highlight any significant differences in the constructs when the data was divided into two groups. The results of the analyses were used to test the three main hypotheses (H1-H3) and each of the secondary hypotheses, ultimately leading to the findings of the study discussed in section 5.6. The following measures were used in the data analysis:

Measure	Description	Values
Correlation coefficient (r)	Used to measure the strength and direction of a relationship between variables	More than 0.80 : Very strong correlation More than 0.50 : Strong correlation Less than 0.50 : Weak correlation
Statistical Significance (p-value)	Indicates the extent to which the result is representative of the entire population	Less than 0.01 : Highly significant Less than 0.05 : Significant Greater than 0.05: Not significant
Coefficient of determination (Multiple R^2)	Indicates how well the model fits the data	Ranges from 0-100% 0% : The model explains none of the variability of the response data 100%: The model explains all the variability of the response data

Table 5.7: Measures used in the data analysis

These results are discussed in detail in Chapter 6.

5.4.1 Multiple Regression Analysis

Regression analysis was used to determine to what extent each of the independent variables could predict the dependent variables of Telework Adoption Intention, Attitude, Subject Norms and Perceived Behavioural Control. The results of the analyses are shown in the following tables. In the regression analysis for Telework Adoption Intention (Table 5.8), Attitude, Subjective Norms and Perceived Behavioural Control are independent variables, while they form the dependent variables in Tables 5.9 to 5.11.

R : 0.34428800 R^2 : 0.11853423 Adjusted R^2 : 0 .09573770	
Construct	***p-value***
Intercept	0.993
Attitude	0.750
Subjective Norms	0.405
Perceived Behavioural Control	0.001

Table 5.8: Results of Multiple Regression Analysis – Telework Adoption Intention

The R^2 value of 0.118 in the above table indicates that nearly 12% of the variance in the data for the Telework Adoption Intention construct was explained by Attitude, Subjective Norms and Perceived Behavioural Control. Perceived Behavioural Control was the only construct that showed a significant influence on Telework Adoption Intention in the regression analysis with a p-value of 0.001 (highly significant).

R : 0.76354317 R^2 : 0.58299818 Adjusted R^2 : 0 .56849377	
Construct	***p-value***
Intercept	0.000
Economic Benefits	0.059
Productivity	0.033
Quality of Life	0.000
Career Development	0.072

Table 5.9: Results of Multiple Regression Analysis – Attitude

The R^2 value of 0.582 indicates that 58% of the variance in the Attitude data was explained by Economic Benefits, Productivity, Quality of Life and Career Development. Significant influencers of Attitude in the regression analysis were Productivity (5% level - significant) and Quality of Life (1% level – highly signigicant).

R : 0.83384525 R^2 : 0.69529790 Adjusted R^2 : 0 .68741768	
Construct	***p-value***
Intercept	0.306
Superior Influence	0.141
Family Influence	0.000
Peer Influence	0.000

Table 5.10: Results of Multiple Regression Analysis – Subjective Norms

The R^2 value of 0.695 indicates that almost 70% of the variance in the Subjective Norms data was explained by Superior, Family and Peer Influences. Family Influence and Peer Influence reflected a highly significant influence on Subjective Norms.

R : 0.76135450 R^2 : 0.57966068 Adjusted R^2 : 0 .56122474	
Construct	***p-value***
Intercept	0.051

Technology	0.001
Workspace	0.240
Support	0.000
Self-Efficacy	0.032
Job Compatibility	0.160

Table 5.11: Results of Multiple Regression Analysis – Perceived Behavioural Control

Table 5.11 indicates that 58% of the variance in the Perceived Behavioural Control data was explained by Technology, Workspace, Support, Self-Efficacy and Job Compatibility. Technology and Support were highly significant and Self-Efficacy exhibited a significant influence on Perceived Behavioural Control.

5.4.2 Correlation Analysis

Correlation analysis was performed using both Pearson and Spearman correlation tests to determine the relationships between variables in the model. Spearman correlation tests were performed to verify the Pearson correlation tests results using a nonparametric test. A summary of the correlation analyses for Telework Adoption Intention, Attitude, Subjective Norms and Perceived Behavioural Control are shown in the following tables. A full correlation analysis for all constructs can be found in Appendix E. The highlighted correlations were significant at a minimum p-value of 0.05.

No significant correlations were found between Attitude and Telework Adoption Intention. In the Pearson correlation analysis, Subjective Norms and Perceived Behavioural Control had significant correlations to Telework Adoption Intention. The analysis using Spearman R returned similar results.

	TELEWORK ADOPTION INTENTION			
	Pearson		***Spearman***	
Construct	***p-value***	***r (X,Y)***	***p-value***	***Spearman R***
Attitude	0.208	0.115	0.085	0.157
Subjective Norms	0.045	0.183	0.047	0.180
Perceived Behavioural Control	0.000	0.336	0.000	0.313

Table 5.12: Summary of Correlation Analysis Results – Telework Adoption Intention

As can be seen in Table 5.13, all independent variables had strong and highly significant correlations to Attitude, with Quality of Life reflecting a strong correlation coefficient (r) at 0.722 in the Pearson analysis.

	ATTITUDE			
	Pearson		***Spearman***	
Construct	***p-value***	***r (X,Y)***	***p-value***	***Spearman R***
Economic Benefits	0.000	0.453	0.000	0.552
Productivity	0.000	0.463	0.000	0.588
Quality of Life	0.000	0.722	0.000	0.715
Career Development	0.000	0.516	0.000	0.555

Table 5.13: Summary of Correlation Analysis Results – Attitude

All independent variables showed highly significant correlations to Subjective Norms, with strong correlations for Family Influence and Peer Influence at 0.761 and 0.654 respectively.

	SUBJECTIVE NORMS			
	Pearson		***Spearman***	
Construct	***p-value***	***r (X,Y)***	***p-value***	***Spearman R***
Superior Influence	0.000	0.358	0.000	0.306
Family Influence	0.000	0.761	0.000	0.738
Peer Influence	0.000	0.654	0.000	0.616

Table 5.14: Summary of Correlation Analysis Results – Subjective Norms

All independent variables had strong and significant correlation to Perceived Behavioural Control with the strongest associations being Technology at 0.648, followed by Support at 0.613 and Self-efficacy at 0.598.

	BEHAVIOURAL CONTROL			
	Pearson		Spearman	
Construct	p-value	r (X,Y)	p-value	Spearman R
Technology	0.000	0.648	0.000	0.639
Workspace	0.000	0.551	0.000	0.543
Support	0.000	0613	0.000	0.602
Self-Efficacy	0.000	0.598	0.000	0.600
Job Compatibility	0.000	0.571	0.000	0.573

Table 5.15: Summary of Correlation Analysis Results – Perceived Behavioural Control

5.4.3 T-tests

Two T-tests were performed to compare the constructs of two different groups of respondents within the sample. The data for teleworkers was compared to that of non-teleworkers and the data for respondents in management positions was compared to that of non-management in order to identify any significant differences between them. The results were expected to provide further insights into the data.

The respondents were grouped into teleworkers and non-teleworkers depending on their responses to question 13 of the questionnaire (frequency of telework). Of the 120 respondents, 58 were classified as teleworkers and 62 as non-teleworkers, while 32 respondents had indicated that they were in management positions. The first T-test was performed against all the constructs with teleworking status (TWORKER) as the grouping variable. The constructs that displayed significant differences between the two groups in the T-test are listed in Table 5.16. The full results of both T-tests are found in Appendix F.

	T-tests; Grouping: TWORKER			
Variable	Mean Teleworkers N=52	Mean Non-Teleworkers N=68	t-value	p-value
Telework Adoption Intention	4.490	2.580	7.407	0.000
Perceived Behavioural Control	6.567	5.911	3.694	0.000
Productivity	6.115	5.313	3.408	0.000
Superior Influence	4.644	3.485	4.216	0.000
Job Compatibility	6.192	5.419	3.003	0.003

Table 5.16: T-Test Results: Constructs showing Significant Differences (Grouping variable = TWORKER)

These results are discussed in further detail in the next chapter.

The T-test comparing management and non-management did not reveal any significant differences in the constructs for these two groupings of respondents.

5.4.4 Summary of the Quantitative Data Analysis

The results of the Pearson and Spearman analyses indicated significant correlations between Attitude, Subjective Norms and Perceived Behavioural Control while Subjective Norms and Perceived Behavioural Control were significantly related to Telework Adoption Intention. In the Regression analysis, however, only Perceived Behavioural Control was identified as a predictor of Telework Adoption Intention.

All independent variables for the Attitude, Subjective Norms and Perceived Behavioural Control constructs had significant correlations with their respective dependent variable. Regression analysis indicated that predictive variables were Productivity and Quality of Life for the Attitude construct, Family Influence and Peer Influence for Subjective Norms and Technology, Support and Self-efficacy for Perceived Behavioural Control.

Table 5.17 contains the summarised results of the regression tests, correlation tests and t-tests.

Construct	Regression p-value	Pearson p-value	Spearman p-value	T-Test p-value (TWORKER)
Attitude	0.750	0.208	0.085	0.380
Subjective Norms	0.405	0.045	0.047	0.202
Perceived Behavioural Control	0.001	0.000	0.000	0.000
Economic Benefits	0.059	0.000	0.000	0.064
Productivity	0.033	0.000	0.000	0.000
Quality of Life	0.000	0.000	0.000	0.207
Career Development	0.072	0.000	0.000	0.835
Superior Influence	0.141	0.000	0.000	0.000
Family Influence	0.000	0.000	0.000	0.070
Peer Influence	0.000	0.000	0.000	0.099
Technology	0.001	0.000	0.000	0.032
Workspace	0.240	0.000	0.000	0.137
Support	0.000	0.000	0.000	0.024

Self-efficacy	0.032	0.000	0.000	0.012
Job Compatibility	0.160	0.000	0.000	0.003

Table 5.17: Summary of the test results

This table will be referenced in the Findings section, where these results will be used to test each of the hypotheses.

5.5 Qualitative Analysis

Three open text questions were included at the end of the survey (Q54-Q56). These questions were posed to respondents in order to verify the results of the quantitative analyses as well as to identify any additional factors or themes that were not uncovered by the preceding survey questions. Some respondents chose not to answer the open questions, thus the number of responses for this set of questions varied between 82 and 103. A total of 284 open text responses comprised the data set available for qualitative analysis. The researcher analysed the data for these questions using manual thematic analysis. This process involved reading through the responses for each question several times, identifying various themes in the data and grouping these themes into a few core themes. The main themes identified in each of the three questions responses are summarized in Table 5.18.

Q54 – TW INFLUENCES (N=82)	COUNT	Q55 – TW DRIVERS (N=103)	COUNT	Q56 - TW INHIBITORS (N=99)	COUNT
Quality of Life	39	Quality of Life	71	Quality of Life	29
Commuting	27	Commuting	49	Company Culture	19
Productivity	24	Productivity	35	Job/Task Compatibility	19
Job/Task compatibility	21	Financial Savings	13	Technology	14
Other	11	Job/Task Compatibility	10	Management Support	13
Superior Influence	6	Technology	2	Superior Influence	7
Financial/Savings	4	Other	2	Productivity	6
Workspace	3	Self-efficacy	1	Workspace	4
Peer Influence	2			Cost	3
Self-efficacy	1			Peer Influence	3
Cost	1			Career Development	2
Career Development	1			Support	1
				Self-efficacy	1

Table 5.18: Thematic Analysis Results: Q54 – Q56

Over all, the most frequently occurring themes were related to quality of life (139), commuting (76), productivity (65) and job compatibility (31) as highlighted above. These themes are listed in order from most prevalent to least prevalent for each question below. A few pertinent quotes from the responses are provided for each theme identified.

(Q54) Can you think of any other influences that may affect your decision to work remotely? Please mention them.

There were 82 responses to this question. The following key themes were identified in the responses:

- **Quality of Life**

  As reflected in Table 5.18, this themes occurred 39 times in the responses to this question. Respondents cited benefits such as being more available for their families, reduced stress levels and avoiding distractions at the office as influencing their decision to telework. Conversely, distractions and young children in the home environment were some of the negative factors mentioned.

  "...I am a single mother so would make life more beneficial to collect my daughter and ensure school homework is done etc."

  "...the break away from the office noise and distractions helps me to focus..."

  "Kids at home (as in during holidays but even after school hours) are a huge distraction…"

- **Commuting**

  Reducing the need to commute to the office was another common theme among the responses to this question. This benefit was often associated with improvements in productivity and quality of life, although a number of respondents seemed to consider the ability to avoid traffic as a benefit in itself without linking this to any other factors.

  "…huge reducatoin [sic] travel costs and time in traffic…"

  "...I'd have to spend between an hour to two hours in traffic to get there…"

  "To avoid morning traffic, rather spend the time I get stuck in traffic working at home…"

- **Productivity**

  The productivity theme featured strongly as an influencer of the decision to work from home. Productivity was frequently associated negatively with distractions at the office and the home, while savings in commute time were positively linked to productivity.

  "Sometimes can be more productive and get through more work at home…"

  "Working from home make me more productive as I get a lots done [sic] in a short period of time..."

  "Kids at home (as in during holidays but even after school hours) are a huge distraction and kill productivity."

- **Job/Task Compatibility**

  The suitability of the job or daily tasks for telework was another common theme in the responses to this question.

  "The need to attend meetings with users and superiors. And at times there is need to be able to physically access the server room.."

  "Type of work and the level of complexity involved"

  "The type of role is highly dependent on whether its feasible to work remotely or not. / Team collaboration and engagement is important and therefore its necessary to come to the office most times"

  "It depends on the volume of backlog that I have. If there is a lot I tend to telework to catch up"

  "The biggest influence for me to telework is the nature of my job…"

(Q55) What would you describe as the biggest drivers for you to work remotely?

There were 103 responses to this question. The following key themes were identified in the responses:

- **Quality of Life**

This theme occurred 71 times in the responses to this question. Maintaining a work-life balance, avoiding interruptions at the office as well as more autonomy and flexibility in their jobs were some of the factors highlighted by the respondents.

"freedom to complete my work at my leisure, and have the ability to run errands if and when i need to"

"the ability to get cooking done while working - saving time"

"avoid disruptions that prevent me from completing planned tasks whilst at the office"

"…time for exercise and more time with Children…"

- **Commuting**

  This theme occurred 49 times in the responses to this question. As with the previous question, some respondents associated savings in commute time with improved productivity, reduced stress levels and cost savings while others simply stated that the avoidance of traffic was a driver for them to work remotely.

  "Increase productivity, reduce wasted time in traffic…"

  "Avoidance of traffic…"

  "Time and money spent commuting is too much. I live plus minus 35kms from the office which is is [sic] Sandton (the nightmare location for traffic in JHB"

  "…being less stressed by the coomuniting [sic]…"

- **Productivity**

  This theme occurred 35 times in the responses to this question. Time saved by not having to commute to the workplace and the avoidance of distractions at the office were once again raised as drivers of telework.

  "Working from home increases my focus: I am easily distracted in an office environment"

  "less noise and distraction from co-workers"

  "…saving an hour of my time by not commuting and using this for work purposes"

- **Economic Benefits**

  The cost saving benefits of telework formed a less common theme and appeared 13 times in the responses to this question.

"Reduces expenses"

"…I save time and money by not driving to work."

"…Save on fuel costs…"

"…cost of space at work, cost of tea / coffee at work, parking costs"

- ***Job/Task Compatibility***

  As in Q54, the nature of work was established as a theme in identifying drivers of telework, although it did not occur as frequently this time (10 times).

  "Remote working is particularly useful to me during budget preparation or management report compilation"

  "Administrative tasks and Business plans would drive working remotely"

  "quiet admin work is easier for me to do at home…"

  "If I need to do work that does not have any people interface, I prefer to do it remotely"

(Q56) What are the main inhibitors for you to work remotely?

There were 99 responses to this question. The following key themes were discovered in the responses:

- **Quality of Life**

  Factors relating to quality of life were a recurring theme and also appeared in the responses to this question. A number of respondents mentioned their desire to interact, collaborate and communicate effectively with colleagues as a factor in their decision to telework. A few reiterated the notion that distractions at home produced a preference for working at the office. This theme appeared 29 times in the responses to this question:

  "…I miss human interaction and office banter. / Sometimes things can get done quicker face to face"

  "Domestic distractions which would prevent me from completing my deliverables."

  "Lack of face to face interaction"

"…the need to freely communicate with peers face to face."

Company Culture

Company culture, including the absence of formal telework policies, was highlighted by respondents as an inhibitor of remote work. This theme occurred 19 times in the responses to this question:

"Company policy does not formally allow it."

"Management Culture and trust issues"

"The traditional perception and culture of certain companies. There is a perception that if you are not at the office, you are not working.."

"…management culture and old belief systems inhibit working from home..."

- **Job/Task Compatibility**

The suitability of certain job roles or tasks for telework was another inhibiting factor that respondents raised. This theme occurred 19 times in the responses to this question:

"Necessity to manage a team face to face. I also need to be available for vendor meetings and management meetings"

"Having to meet with customers face to face."

"Clients want to see people that they are paying for.."

"When meetings are scheduled at the last minute - same day meetings"

"…having to visit customers who need me to be present (which is fair)"

- **Technology**

The lack of suitable technology for teleworking was another inhibitor for some respondents. These issues were mainly related to reliable and affordable bandwidth, while some merely stated "technology" or "infrastructure" as an inhibiting factor. This theme occurred 19 times in the responses to this question:

"…internet connectivity is sometimes an issue"

"…cost of connectivity; both internet and telephone"

"Load shedding, internet instability and or down time."

"Poor internet connectivity sometimes would hinder effective remote connection. Power cuts as well, because at home there is no back up generator like at work"

- **Management Support**

  Management's attitude towards telework was another factor mentioned by some respondents. This attitude was related mainly to a lack of trust and in observation based management practices:

  "…management perceives telework negatively because they don't encourage it"

  "In my case management attitude is one such inhibiting factor. Though the company policy allow working from home, you will find from time to time but [sic] of resistance."

  *"The organisational leadership do not consider it to be of benefit to the organisation. / * My head of department prefers that we are on site."*

5.5.1 Summary of Qualitative Analysis

The most frequently occurring themes in the open question responses are summarised in Table 5.19.

Theme	Frequency
Quality of Life	139
Commuting	76
Productivity	65
Job Compatibility	50

Table 5.19: Summary of Thematic Analysis Results – Open Questions (Q54- Q56)

The themes for Quality of Life, Productivity, Technology and Job Compatibility matched existing constructs in the research model. Matters relating to commuting and traffic issues could not be mapped directly to any existing constructs in the model. Respondents sometimes mentioned traffic and commute concerns in relation to Economic Benefits and Quality of Life, although they did not always suggest a link with the two. A separate theme, "Commuting" was therefore added. Commuting was the second strongest theme and was found in responses regarding both influencers and drivers of telework. Quality of Life was by far the strongest theme observed, occurring in all three open questions. The Productivity theme appeared in all three open responses, although to a lesser extent in the question about telework inhibitors.

Economic Benefits featured as both a driver and influencer of telework adoption, but did not form a central theme in the responses. Career Development and Workspace were not recurring themes. The influence of superiors, family and peers had low representation in the responses. When quizzed about inhibitors of telework adoption, Company Culture featured strongly amongst the responses and was identified as a separate theme. Other noteworthy inhibitors mentioned were Technology and Management Support though these were not significant.

5.6 Findings

In this section each of the three primary hypotheses (H1- H3) and their sub-hypotheses are tested using the results of the regression analysis, correlation analysis and t-tests found in the previous section. The results of the regression analysis are summarized in Figure 5.1. The beta coefficient (b) and associated t-values for each dependent variable are reflected in the diagram. The p-values (significance) are indicated with either one or two asterisks (*), reflecting $p < .05$ and $p < .01$ respectively. The data in Tables 5.9 to 5.11 are also referenced here.

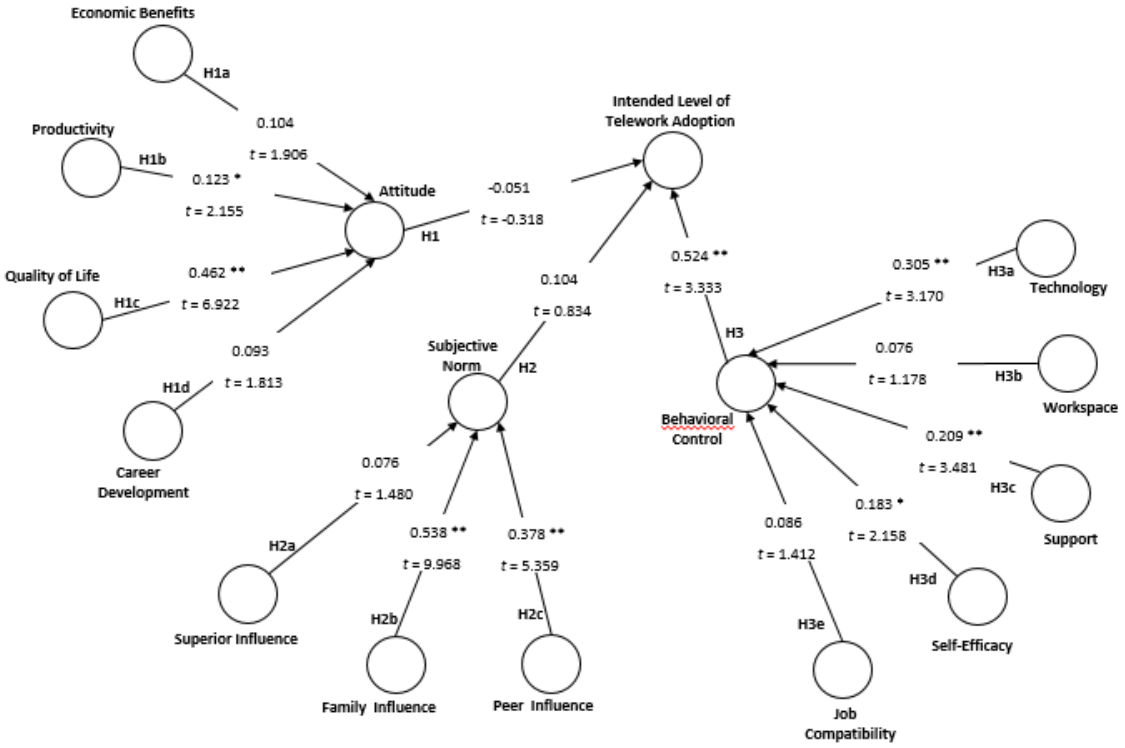

Figure 5.1: Results of the Regression Analysis

5.6.1 Attitude

H1: Attitude has a significant positive influence on Telework Adoption Intention

Regression testing revealed no significant relationship between Attitude and Telework Adoption Intention. In addition, the t-tests did not show any significant difference in the mean scores for Attitude between teleworkers and non-teleworkers. Pearson and Spearman correlation tests

results confirmed that no significant relationships existed between these two constructs. The hypothesis that Attitude has a significant effect on Telework Adoption Intention was therefore rejected and the null hypothesis was accepted.

5.6.2 Economic Benefits

H1a: Economic Benefits have a significant positive influence on Attitude

Economic Benefits loaded strongly onto a single factor in the factor analysis, indicating that it was an independent factor. No significant relationship was identified between Economic Benefits and Attitude in the regression analysis, however the correlation tests showed a significant relationship between these two variables. This suggests a positive association between these two constructs, but no causal relationship. As a result the hypothesis that Economic Benefits have an effect on Attitude was rejected and the null hypothesis accepted. In the qualitative analysis, Economic Benefits did not emerge as a strong theme amongst the responses to the open survey questions, further supporting this finding.

5.6.3 Productivity

H1b: Productivity has a significant positive influence on Attitude

The regression analysis indicated that Productivity was a significant predictor of Attitude, albeit with a low beta co-efficient of 0.123. The correlation analyses also reflected a significant relationship with Attitude. The t-test reflected significant differences in the means for Attitude between when comparing teleworkers to non-teleworkers. The hypothesis that Productivity has an effect on Attitude was accepted with a 95% confidence interval and the null hypothesis was rejected. This finding is supported by the fact that Productivity was one of the most common themes identified in the qualitative analysis, appearing in the responses to all three open questions.

5.6.4 Quality of Life

H1c: Quality of Life has a significant positive influence on Attitude

Regression analysis indicated that Quality of Life was the strongest predictor of Attitude with a beta co-efficient of 0.462 and a t-value of 6.92. This relationship was also highly significant at $p < .01$. This was confirmed by the correlation analyses which indicated a strong and highly significant relationship between these two constructs. The hypothesis that Quality of Life has an effect on Attitude was therefore accepted with a 99% confidence interval and the null hypothesis was rejected. The qualitative data provided significant backing for this finding. Quality of Life was the most commonly occurring theme in the thematic analysis and was highlighted by respondents as an influencer, driver and potential inhibitor of telework adoption.

5.6.5 Career Development

H1d: Career Development has a significant positive influence on Attitude

No significant relationship was identified between Career Development and Attitude in the regression analysis, however the correlation tests showed a significant relationship. This suggests a positive association between these two constructs, but no causal relationship. As a result the hypothesis that Career Development has an effect on Attitude was rejected and the null hypothesis was accepted. Career Development arose only three times as a theme in the qualitative responses, signifying that it was not an important factor for the respondents. The finding based on the regression analysis is therefore supported.

5.6.6 Subjective Norms

H2: Subjective Norms has a significant positive influence on Telework Adoption Intention

In the factor analysis, Subjective Norms loaded strongly onto a single factor, indicating that it is an independent factor. Correlation analysis revealed a statistically significant relationship between Subjective Norms and Telework Adoption Intention, however the correlation was weak. The t-test for Subjective Norms reflected no significant difference in the mean scores of teleworkers and non-teleworkers. The regression tests showed no significant relationship between Subjective Norms and Telework Adoption Intention. The hypothesis that Subjective Norms has a significant influence on Telework Adoption Intention was therefore rejected and the null hypothesis was accepted. Social influences were generally absent in the qualitative responses, supporting the finding that Subjective Norms was not an important influencer of the intention to telework.

5.6.7 Superior Influence

H2a: Superior Influence has a significant positive influence on Subjective Norms

No significant relationship was identified between Superior Influence and Subjective Norms in the regression analysis, however the correlation tests showed a significant relationship. This suggests a positive association between these two constructs, but no causal relationship. As a result the hypothesis that Superior Influence has an effect on Subjective Norms was rejected and the null hypothesis was accepted. The qualitative data supported this finding with Superior Influence being a weak theme amongst respondents.

5.6.8 Family Influence

H2b: Family Influence has a significant positive influence on Subjective Norms

Regression analysis indicated that Family Influence was highly significant and was the best predictor of Subjective Norms with a b-coefficient of 0.524 and a t-value of 9.96. The

correlation analyses also showed a significant relationship between these two constructs. The hypothesis that Family Influence has an effect on Subjective Norms was accepted at the 1% level and the null hypothesis was rejected. The qualitative data, however, did not reflect this finding since the influence of family members did not feature as a theme amongst the responses.

5.6.9 Peer Influence

H2c: Peer Influence has a significant positive influence on Subjective Norms

Regression analysis indicated that Peer Influence was a highly significant predictor of Subjective Norms, though not as strong as Family Influence (b=0.378 and t=5.35). The correlation analyses confirmed this significant relationship. The hypothesis that Peer Influence has an effect on Subjective Norms was accepted at the 1% level and the null hypothesis was rejected. Respondents made little mention of Peer Influence as a factor in their adoption of telework, thus this finding is not supported by the qualitatively data.

5.6.10 Perceived Behavioural Control

H3: Perceived Behavioural Control has a significant positive influence on Telework Adoption Intention

Perceived Behavioural Control was the only construct that showed a significant causal relationship with Telework Adoption Intention in the regression analysis, reflecting a strong b-coefficient of 0.524 and a t-value of 3.33. The T-test results reflected a significant difference in the means for Perceived Behavioral Control between teleworkers and non-teleworkers, indicating that it was a potentially significant factor. Perceived Behavioural Control also had a highly significant relationship with Telework Adoption Intention in the correlation analyses. Based on these test results the hypothesis that Perceived Behavioural Control has a significant impact on Telework Adoption Intention was accepted at the 1% level.

5.6.11 Technology

H3a: Technology has a significant positive influence on Perceived Behavioural Control

Regression Analysis indicated that Technology was the best predictor of Perceived Behavioural Control with a moderate b-coefficient of 0.305 and a highly significant p-value of <.01. The correlation analyses showed a significant relationship between Technology and Perceived Behavioural Control. This hypotheses was accepted at the 1% level and the null hypothesis was rejected. The qualitative data showed somewhat weak support for this finding. Technology was only mentioned as a factor by a few respondents and mainly as an inhibitor of telework.

5.6.12 Workspace

H3b: Workspace has a significant positive influence on Perceived Behavioural Control

Workspace loaded strongly onto a single factor in the factor analysis, indicating that it was an independent factor. No significant relationship was identified between Workspace and Perceived Behavioural Control in the regression analysis, however the correlation tests showed a significant relationship. This suggests a positive association between these two constructs, but no causal relationship. As a result the hypothesis that Workspace has an effect on Perceived Behavioural Control was rejected and the null hypothesis accepted. Workspace was a weak theme in the qualitative responses, further supporting this finding.

5.6.13 Support

H3c: Support has a significant positive influence on Perceived Behavioural Control

Regression Analysis indicated that Support was a highly significant predictor of Perceived Behavioural Control. The correlation analyses showed a significant relationship between the two constructs. This hypothesis was accepted at the 1% level and the null hypothesis was rejected. The qualitative data did not provide strong support for this finding with the Support theme manifesting mainly as an inhibitor of telework in the form of a lack of management support.

5.6.14 Self-Efficacy

H3d: Self-Efficacy has a significant positive influence on Perceived Behavioural Control

The correlation analyses showed a significant relationship between Self-Efficacy and Perceived Behavioural Control. Similarly, regression analysis indicated that Self-Efficacy had a significant relationship with Perceived Behavioural Control, however is was not a strong predictive factor, with a low beta co-efficient of 0.183. The hypothesis was accepted at the 5% level and the null hypothesis was rejected. Qualitative analysis results did not provide support for this finding.

5.6.15 Job Compatibility

H3e: Job Compatibility has a significant positive influence on Perceived Behavioural Control

Job Compatibility loaded strongly onto a single factor in the factor analysis, indicating that it was an independent factor. Correlation analysis indicated a significant relationship between Job Compatibility and Perceived Behavioural Control and the t-test displayed significant differences in the means for the Job Compatibility construct between teleworkers and non-teleworkers. However, no significant relationship was found between Job Compatibility and Perceived Behavioural Control in the regression analysis, suggesting that a positive association exists between these two constructs, but no causal relationship. As a result the hypothesis was rejected and the null hypothesis accepted. This finding was not supported by the qualitative data with Job Compatibility appearing as a prevalent theme in all three open question responses, mainly as a significant influencer and inhibitor of telework. This could be an indication that this construct was not adequately represented in the questionnaire.

5.7 Summary

Quantitative and qualitative data analysis methods were applied to analyse the survey data, test the hypotheses and determine the findings of the research. Results of the quantitative analysis indicated that Perceived Behavioural Control had a major influence on IT workers' intention to adopt telework and was also the only one of the three TPB factors not rejected in regression testing. Perceived Behavioural Control was, in turn, found to be influenced by the Technology, Support and Self-Efficacy factors while Workspace and Job Compatibility had no significant effect. Although both Attitude and Subjective Norms reflected some correlation with Telework Adoption Intention, these associations were weak and these constructs were not found to be predictors of adoption intention. Both Quality of Life and Productivity had a significant influence on Attitude, while Economic Benefits and Career Development had no significant effect. Subjective Norms were governed by Peer Influence and Family Influence. Superior Influence, though being significantly correlated to Subjective Norms, was not found to be a predictive factor.

The themes that emerged from the qualitative analysis supported the majority of the quantitative analysis results and highlighted Quality of Life, Productivity and Job Compatibility as the most noteworthy themes. Commuting and Company Culture were recognized as significant new themes in the qualitative data.The results of the hypothesis tests are summarised in Table 5.20.

Hypothesis Number	Hypothesis	Result
H1	**There is a significant positive relationship between attitude and the intention to adopt telework**	**Rejected**
H1a	There is a significant positive relationship between economic benefits and attitude	Rejected
H1b	There is a significant positive relationship between productivity and attitude	Accepted
H1c	There is a significant positive relationship between quality of life and attitude	Accepted
H1d	There is a significant positive relationship between career development and attitude	Rejected
H2	**There is a significant positive relationship between subjective norms and the intention to adopt telework**	**Rejected**
H2a	There is a significant positive relationship between superior influence and subjective norms	Rejected
H2b	There is a significant positive relationship between family influence and subjective norms	Accepted
H2c	There is a significant positive relationship between peer influence and subjective norms	Accepted
H3	**There is a significant positive relationship perceived behavioural control and intention to adopt telework**	**Accepted**
H3a	There is a significant positive relationship between technology and perceived behavioural control	Accepted
H3b	There is a significant positive relationship between workspace and perceived behavioural control	Rejected
H3c	There is a significant positive relationship between self-efficacy and perceived behavioural control	Accepted
H3d	There is a significant positive relationship between support and perceived behavioural control	Accepted
H3e	There is a significant positive relationship between job compatibility and perceived behavioural control	Accepted

Table 5.20: Summary of the the Hypothesis Test Results

These findings, along with their implications for the research, are discussed in the next chapter.

Chapter Six: Discussion and Conclusion

In order to provide focus to the discussion of the findings, this chapter begins by reviewing the research question, research objectives and research objectives of this study. The findings are then discussed with reference to existing literature to provide support for the findings and to highlight any contradictions with previous research. Finally, the conclusions drawn from the research are presented and areas for future research are proposed.

6.1 Review of the Research Question and Research Objectives

This research study focused on the question:

"What factors influence South African IT workers' intention to telework?"

The objectives of this research were:

(i). To establish the influence that elements of the Theory of Planned Behaviour namely Attitude, Subjective Norms and Perceived Behavioural Control have on IT workers' intention to adopt telework.
(ii). To determine the influence of the respective antecedents of Attitude, Subjective Norms and Perceived Behavioural Control.

6.2 A Review of the Research Model

Based on the Decomposed Theory of Planned Behaviour, the research model measured aspects of attitude, subjective norms and perceived behavioural control and the degree to which each factor influenced telework adoption intention. In the model, attitude, subjective norms and perceived behavioural control are decomposed further to measure the impact of each of their respective antecedents on these three constructs. The three main hypotheses and their sub-hypotheses were derived from this model. The core constructs of Attitude, Subjective Norms and Perceived Behavioural Control were expected to significantly affect Telework Adoption Intention, while their corresponding antecedents were expected to have varying degrees of influence.

6.3 Discussion

Khalifa and Davison (2008) previously demonstrated the applicability of the TPB in their research on telework continuance, that is, continued usage after initial adoption. They found that all three factors of the TPB, namely attitude, subjective norms and perceived behavioural control contributed to telework continuance. In their recommendations for future research, Khalifa and Davison (2008) suggested that the model should be applied to different contexts. This study achieved this by using an adapted form of the model to explore the telework adoption intentions

of IT workers within the South African context. Empirical results on the significance of the attitudinal, subjective norms and perceived behavioural control variables that are specific to telework revealed that Perceived Behavioural Control had the most significant effect on IT workers' intention to telework. As for Subjective Norms and Attitude, their effects were not significant. The relative importance of each of the determinants on the intended adoption level of telework were also identified, as reflected in Table 6.2.

Factor	Finding
Attitude	Has no significant influence on Telework Adoption. Is influenced by Quality of Life and Productivity. Economic Benefits and Career Development have no significant effect.
Subjective Norms	Has no significant influence on Telework Adoption. Is influenced by Peer Influence and Family Influence. Superior Influence has no significant effect.
Perceived Behavioural Control	Is the only factor that has a significant influence on Telework Adoption Intention Is influenced by Technology, Support and Self-Efficacy. Workspace and Job Compatibility are not significant factors.

Table 6.2: Summary of the Research findings

6.3.1 Perceived Behavioural Control

Perceived Behavioural Control reflects the individual's perception of the availability of resources, skills and opportunities that are required to telework. The research established that Perceived Behavioural Control has the most influence on Telework Adoption Intention and that it is a predictor of adoption. Perceived Behavioural Control was in turn determined by the significant factors of Technology, Support and Self-Efficacy while Workspace and Job Compatibility had no noteworthy effect. In other words, IT workers' intention to telework was influenced primarily by their perceptions of the availability of technology such as reliable internet connections, the level of support for teleworking that they experience in the organisations where they work and to a lesser degree, their level of confidence in being able to work remotely.

In this study, technology was established as the biggest factor affecting the behavioural controls experienced by IT workers. Any telework program requires technology as a key component since it provides workers with the tools that enable remote communication and collaboration (Siha and Monroe, 2006). Since managers and their subordinates do not share the same physical location, an increased reliance is placed on electronic communication tools (Turetken et al., 2011). The cost of broadband in South Africa is a known constraint. When bandwidth is not

affordable, this enabler of telework can become a significant inhibitor. The lack of access to reliable remote access tools was one of the key themes in the open question responses on telework inhibitors. This affirms the importance of access to technology in enabling the adoption of telework by IT workers.

Support exerted a moderate effect on Perceived Behavioural Control. Teleworkers need both technical and non-technical support for performing remote work. Top management support is essential for any telework initiative to be successful since senior management are in a position to support telework programs and provide the necessary funding (Peters and Heusinkveld, 2009). In the literature, a lack of senior management support was identified as one of the greatest moderators of work-life balance programs (Mayo, Pastor, Gomez-Mejia and Cruz, 2009). Managing employees who cannot be physically observed is one of the biggest challenges for the supervisors of teleworkers. Changes to management practices, such as the change from managing employee performance through direct observation to a management by objectives model, require top management support (Peters et al., 2004).

Self-efficacy had the weakest effect on Perceived Behavioural Control, but was nevertheless significant. In the literature, self-efficacy is found to be critical to workers' intention to telework. Khalifa and Davison (2008) found self-efficacy to be a significant concern amongst teleworkers.

No significant relationship was found between Job Compatibility and Telework Adoption. This finding was surprising considering that in the literature, a lack of compatibility between the job function and telework was frequently associated with low adoption rates. Teleworkers need a suitable work space for performing remote work (Khalifa and Davison, 2008). In this study, however, work space was not identified as a significant constraint.

Correlation analysis reflected strong relationships between the technology, support and self-efficacy factors. This finding is congruent with the literature, affirming that providing ICT equipment, creating telework policies and procedures and the provision of training for teleworkers are important practical aspects of telework success (Boell et al., 2013). It is therefore possible that by addressing one of these factors, such as providing IT workers with access to reliable internet technology, the level of organisational support experienced by these workers would increase. As workers take advantage of this technology and work remotely more often, their level of self-efficacy should also improve accordingly. It is worth noting that Perceived Behavioural Control was found to be the weakest factor in the study done by Khalifa and Davison (2008). While this disparity could be attributable to the slightly different focus of that study, it may also suggest important differences between the North American and South African contexts with regard to the factors that influence telework adoption.

6.3.2 Subjective Norms

Subjective Norms encapsulates the social factors that influence an individual's intention to telework. In the model, the determinants of Subjective Norms were Superior Influence, Family

Influence and Peer Influence. Results show that the influence of family members was the main social factor affecting the subjective norms of IT workers. Family members often stand to benefit from the flexibility that telework provides workers, thus they would be expected to encourage this style of work. The finding that the opinions of superiors had little influence on IT workers' intentions was somewhat surprising. As previously indicated, management support is an important factor in the success of telework programs. In the literature, managers' perceptions of teleworking were found to be an important bottleneck or driver when it comes to the introduction and adoption of teleworking practices (Peters and Batenburg, 2015). Subjective Norms reflected some correlation with the intention to adopt telework, however these associations were weak and both constructs were not found to be good predictors of adoption intention. In other words, neither positive nor negative social pressures significantly influenced IT workers' intention to adopt telework.

6.3.3 Attitude

Much research has been done in the past on the perceptions and attitudes of workers towards telework. The results of this study showed no significant relationship between IT workers' attitudes and their intention to adopt telework. As with Subjective Norms, Attitude reflected some correlation with the intention to adopt telework, however this association was weak and Attitude was not found to be a good predictor of adoption intention. Thus IT workers' attitudes towards telework on their own had little bearing on their adoption intentions. In other words, their attitude is not a deciding factor and strong positive attitudes towards telework will not necessarily translate into higher adoption levels.

Quality of Life and Productivity both had a significant influence on Attitude. The strongest determinant of Attitude was Quality of Life, which was also a recurring theme in the open questions responses. Attitudes were determined mainly by a need for a good quality of life and to a lesser degree, the need to improve productivity. The Quality of Life construct encompasses quality of home life, quality of work life and quality of social life. In the open responses, Quality of Life was mentioned by respondents more than any other theme. This is congruent with literature claiming that IT workers generally desire to improve their work-life balance due to significant work pressures and stress in the IT profession. Productivity had a small but significant effect on Attitude. The potential improvements in employee productivity were viewed by many of the respondents as an important influencer as well as a driver of telework adoption. Interestingly, cost savings and career development concerns were not important factors in determining attitudes towards telework.

6.3.4 Other Findings

In the open questions Company Culture was mentioned a number of times as an inhibitor of telework and was therefore acknowledged as a new theme, but could not be examined further due to the limited available data and the time constraints of the research. Company culture and

related trust issues between management and workers have been highlighted as moderators of telework in past studies and deserve further exploration. The cultural values and beliefs of an organisation can be an important determinant of a telework program's chances of success (Tietze, Musson and Scurry, 2009). A high degree of trust between team members as well as between management and their subordinates is required for telework success. In order for telework to flourish a special organisational culture is needed with relationships built on trust (Golden and Veiga, 2008).

When examining the themes found across all three of the open question responses, factors relating to traffic and commuting issues followed quality of life as the most prevalent overall themes. Some IT workers considered the potential cost savings and increased productivity benefits provided by telework as a major driver for their adoption of telework, while many seemed to regard the opportunity to avoid commuting and associated traffic as a great benefit in itself. "Commuting" was identified as a new theme since it was not highlighted in the previous research by Khalifa and Davison (2008). A possible explanation for this difference could be that their research was done in the North American context, where public transport infrastructure is generally better and more established. The low usage of public transport is evidenced in the fact that only 10% of IT workers who participated in the survey used public transport.

Another potentially significant difference between the two studies is the fact that interviews were conducted at the beginning of the previous study, as a belief elicitation exercise. These beliefs were then incorporated into the model as the antecedents of attitude, subjective norms and perceived behavioural control. In hindsight, the beliefs held by South African IT workers could be quite different from the ones held by their North American counterparts. For example, commute and traffic issues could be expected to feature more prominently as antecedents of attitude, while company culture would be a potential determinant of behavioural control for South African IT workers. Eliciting and incorporating these beliefs would potentially produce different results.

6.4 Conclusion

In this research, the Theory of Planned Behaviour was applied to the study of telework adoption in an attempt to answer the question "What factors influence South African IT workers' intention to telework?"
The objectives of this study were to assess the influence of elements of the TPB namely attitude, subjective norms and perceived behavioural controls as well their previously identified antecedents on telework adoption amongst IT workers within the South African context. A theoretical model based on the Decomposed Theory of Planned Behaviour was used to guide the research and data was collected via an online survey of South African IT workers. The survey was conducted over a relatively short period (six weeks) and the sample size was relatively small. The geographical location of respondents could also not be reliably established. These factors may affect the generalisability of the research results to the entire population of South African IT workers. This is a li mitation of the study.

Results of the study indicate that IT workers' attitudes towards telework, though generally positive, have little bearing on their intentions to adopt this style of work. Likewise the influence of significant others (subjective norms) did not really affect IT workers' propensity to telework. Instead, a key determining factor of the intention to telework was IT worker's perceived behavioural controls. The availability and cost of the technology that enables telework, the level of technical and other support for teleworking provided by employers and the level of confidence that IT workers have in their ability to be effective while working independently at a remote location were the main contributors to the perceived behavioural controls.

There are a number of implications of these findings. Firstly, management need to address technology issues and better support IT staff who wish to telework. Employers should provide financial support to subsidise the high cost of bandwidth in South Africa while also providing training for staff to be able to work effectively while away from the office. Addressing the technology and support challenges should also improve the self-efficacy of workers with regards to working remotely. The significant effect of perceived behavioural control and the lack of significance of attitude and subjective norms contrast with the results of Khalifa and Davison (2008), supporting the idea that initial adoption and continuance are different. This could also indicate that the different context of the study (South Africa) is significant.

Future research could expand this study by making use of interviews to incorporate the specific beliefs of South African IT workers into the research model. Examining the company culture and related management trust issues highlighted by some IT workers in this study could provide new insights into telework adoption factors not fully explored in this study.

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8. Appendix A: Survey Questionnaire

Purpose: To determine the factors that influence IT workers' intention to telework

- In this questionnaire the term "Telework" refers to the use of a location other than the traditional office (e.g. your home) to perform your daily work activities.
- To participate in the survey, you must be an Information Technology (IT) professional employed on a full-time basis.

Please check only one of the options per question.

Personal Information

1. Please indicate your gender:
   ☐ Male ☐ Female

2. Please specify your age group:
   ☐ Under 30 ☐ 30 – 40 ☐ 41 – 50 ☐ Over 50

3. Please specify the number of children currently living with you:
   ☐ None ☐ 1 ☐ 2 ☐ 3 ☐ More than 3.

4. How many children do you have at home during working hours?
   ☐ None ☐ 1 ☐ 2 ☐ 3 ☐ More than 3.

Employment Information

5. Please select your occupation:
   ☐ Software Developer
   ☐ Application / Systems Administrator
   ☐ IT Specialist
   ☐ Support Technician
   ☐ IT Management
   ☐ Other. Please specify _____

6. Please select the industry sector that you are employed in:
   ☐ Manufacturing
   ☐ Retail
   ☐ Finance
   ☐ Government / Public sector
   ☐ IT Vendor / IT Service Provider
   ☐ Other. Please specify _____

7. Please indicate how many years of work experience you have in the IT profession:

☐ Less than 1 year

☐ 1 – 5 years

☐ 5 – 10 years

☐ 10 – 15 years

☐ More than 15 years

8. How long have you been with your current employer?

☐ Less than 1 year

☐ 1 – 5 years

☐ 5 – 10 years

☐ 10 – 15 years

☐ More than 15 years

9. How much time do you spend commuting to work (daily total)?

☐ Less than 30 minutes

☐ 30 – 60 minutes

☐ 60 – 90 minutes

☐ More than 90 minutes

10. What is your primary means of travel when commuting to work?

☐ Public Transport ☐ Own transport ☐ Walking

Commuting to Work

11. Does your employer have a formal policy allowing people to telework?

☐ Yes ☐ No ☐ I'm not sure

12. How long has the telework policy been in place?

☐ I don't know / Not Applicable

☐ Less than 1 year

☐ 1 – 5 years

☐ 5 – 10 years

☐ More than 10 years

Teleworking

13. How frequently do you telework currently? (average number of days per week)

☐ none

☐ less than 1 day

☐ 1 – 2 days

☐ 2 – 3 days

☐ 3 – 4 days

☐ 4 - 5 days

☐ More than 5 days

14. What proportion of your job do you from home instead of in the office?

☐ none

☐ less than 10%

☐ 10 – 30%

☐ 30 – 50%

☐ 50 – 70%

☐ 70 – 90%

☐ More than 90%

15. In the next 6 months, how many days per week do you intend to be working from home?

☐ none

☐ less than 1 day

☐ 1 – 2 days

☐ 2 – 3 days

☐ 3 – 4 days

☐ 4 - 5 days

☐ More than 5 days

16. In the next 6 months, what proportion of your job do you intend to be doing remotely instead of in the office?

☐ none

☐ less than 25%

☐ 25 – 50%

☐ 50 – 75%

☐ 75 – 100%

Please check the appropriate box to indicate your level of agreement or disagreement with each of the following statements.

	Statement	Strongly Agree	Agree	Somewhat Agree	Neither Agree Nor Disagree	Somewhat Disagree	Disagree	Strongly Disagree
	Economic Benefits							
17	Teleworking is economically beneficial to me / would be economically beneficial to me							
18	Teleworking has effectively reduced my expenses / would effectively reduce my expenses							
	Productivity							
19	I am more productive / would be more productive with teleworking than without teleworking							
20	Teleworking has effectively improved my work productivity / would effectively improve my work productivity							
21	My overall productivity increased / would increase because of teleworking							
	Career Development							
22	Teleworking helps my career / would help my career							
23	My career development is positively affected / would be positively affected by teleworking							
24	Teleworking improves my career advancement / would improve my career advancement							
	Quality of Life							
25	Teleworking has improved the quality of my family life / would improve the quality of my family life							
26	Teleworking has improved the quality of my work life / would improve the quality of my work life							

	Statement	Strongly Agree	Agree	Somewhat Agree	Neither Agree Nor Disagree	Somewhat Disagree	Disagree	Strongly Disagree
27	Teleworking has improved the quality of my social life / would improve the quality of my social life							
	Overall Attitude Towards Telework							
28	Telework is beneficial to me							
29	Teleworking is a good idea							
30	Teleworking is pleasant							
	Influences: Peers							
31	My friends think that I should telework							
32	My friends encourage me to telework							
33	I am encouraged by my colleagues to telework							
34	My colleagues think that I should telework							
	Influences: Superiors							
35	My boss/superior thinks that I should telework							
36	I am encouraged by my boss/superior to telework							
	Influences: Family							
37	I am encouraged by my family to telework							
38	My family thinks that I should telework							
	Overall Influences							
39	People who influence my behaviour think that I should telework							
40	People who are important to me think that I should telework							

	Statement	Strongly Agree	Agree	Somewhat Agree	Neither Agree Nor Disagree	Somewhat Disagree	Disagree	Strongly Disagree
	Compatibility with Remote Work							
41	My job is ideal for telework							
42	Most of my daily tasks can be done remotely							
	Ability to Work Remotely							
43	I feel comfortable / would feel comfortable working remotely on my own							
44	I can easily work remotely / I could easily work remotely							
45	I am capable of working effectively from a remote location							
	Support for Remote Work							
46	The technical support for teleworking provided to me is appropriate / would be appropriate							
47	The overall support for teleworking available to me is appropriate							
	Remote Work Space							
48	I have a suitable remote work setting							
49	My remote work space is appropriate							
	Remote Work Setting							
50	I have access to the appropriate technology (such as 3G or ADSL) for teleworking							
51	I have access to the appropriate hardware/software for teleworking							
	Overall Readiness for Remote Work							
52	I have the resources, knowledge and the ability to telework effectively							

	Statement	Strongly Agree	Agree	Somewhat Agree	Neither Agree Nor Disagree	Somewhat Disagree	Disagree	Strongly Disagree
53	Teleworking is entirely within my control / would be entirely within my control							

Open questions **(Please answer briefly in your own words)**

54. Can you think of any other influences that may affect your decision to work remotely? Please mention them briefly.

55. What would you describe as the biggest drivers for you to work remotely?

56. What are the main inhibitors for you to work remotely?

Thank you for taking the time to complete this questionnaire.

9. Appendix B – Survey Covering Letter

Department of Information Systems

Leslie Commerce Building
Engineering Mall, Upper Campus
OR
Private Bag. Rondebosch 7701
Tel: +27 (0) 21 650 4028 Fax: +27 (0) 21650 2280
Internet: http://www.commerce.uct.ac.za/informationsystems/

15 June 2016

Dear Sir/Madam,

I am studying towards a Masters of Commerce degree in Information Systems at the University of Cape Town. As part of my studies I have to complete a research project. Your participation in this research will be greatly appreciated and will allow me to understand the factors that influence the adoption of telework amongst IT workers. I kindly request you to take part in this research by completing the online survey questionnaire using the link provided.

Only your own opinion is important. You do not have to give your name, so no one will find out what your answers were. We cannot and do not want to find out who answered what. The questionnaire has been approved by the UCT Ethics committee. Completing this questionnaire should take no longer than **20 minutes**.

The collective findings of this study will be captured in a report that will be presented to the University of Cape Town for academic purposes. The findings may also be published in an academic journal or presented at a conference if the information is deemed to be of of academic value.

PREREQUISITE: To complete this survey questionnaire, you must be a full-time IT employee
DUE DATE: The online survey questionnaire is available and can be completed immediately, but no later than 29 July 2016. .
IMPORTANT: You do not have to complete this survey questionnaire. Participation is completely voluntary. If you have any questions about completing the questionnaire, please feel free to contact me using the details below.

Thank you for your time and participation.

Kind regards,

Joseph Morrison **joseph.morrison@alumni.uct.ac.za** (Researcher)

Prof. Wallace Chigona wallace.chigona@uct.ac.za (Research Supervisor)

10. Appendix C: Ethics Form

UNIVERSITY OF CAPE TOWN
FACULTY OF COMMERCE
Igniting Knowledge and Opportunity

Commerce Faculty Ethics in Research Application Form

Any person planning to undertake research in the Faculty of Commerce at the University of Cape Town is required to complete this form **before collecting or analysing data**. If any of the questions below have been answered YES, and the applicant is NOT an Honours student, the form it should be submitted to the supervisor (where applicable) and from there for approval by the Faculty EIR committee: Ms Samantha Alexander (**samantha.alexander@uct.ac.za).**

It is assumed that the researcher has read the UCT Code for Research involving Human Subjects (Available at http://web.uct.ac.za/depts/educate/download/uctcodeforresearchinvolvinghumansubjects.pdf) in order to be able to answer the questions in this form.

Students must include a copy of the completed form with the dissertation/thesis when it is submitted for examination.

1. PROJECT DETAILS		
Project title: Factors impacting on South African IT workers' decision to telework		
Principal Researcher/s: Joseph Morrison	**Email address(es):**	joseph.morrison@hp.com
Research Supervisor: Wallace Chigona	**Email address(es):**	wallace.chigona@uct.ac.za
Co-researcher(s): N/A	**Email address(es):**	N/A
Department: Information Systems		

Brief description of the project:

The purpose of the study is to examine the low telework adoption rates in South Africa. Research will focus on individual IT workers in South Africa and the factors that influence their decision to either adopt or not adopt telework. Telework or telecommuting refers to the concept of some or all the employees of a company using a location other than the traditional office to perform their daily work activities.

Data collection: (please select)

☐ Interviews ☑ Questionnaire ☐ Experiment ☐ Secondary data ☐ Observation

☐ Other (please specify):

Have you attached a research proposal OR a literature review with research methodology? (please select) ☑ Yes ☐ No

2. PARTICIPANTS

2.1 Does the research discriminate against participation by individuals, or differentiate between participants, on the grounds of gender, race or ethnic group, age range, religion, income, handicap, illness or any similar classification?	YES	NO √
2.2 Does the research require the participation of socially or physically vulnerable people (children, aged, disabled, etc.) or legally restricted groups?	YES	NO √
2.3 Will you be able to secure the informed consent of all participants in the research? (In the case of children, will you be able to obtain the consent of their guardians or parents?)	YES √	NO
2.4 Will any confidential data be collected or will identifiable records of individuals be kept?	YES	NO √
2.5 In reporting on this research is there any possibility that you will not be able to keep the identities of the individuals involved anonymous?	YES	NO √
2.6 Are there any foreseeable risks of physical, psychological or social harm to participants that might occur in the course of the research?	YES	NO √
2.7 Does the research include making payments or giving gifts to any participants?	YES	NO √

If you have answered **YES to any of these questions**, please describe how you plan to address these issues (append to form):

Affiliations of participants: (please select)

☑Company employees ☐Hospital employees ☐General public ☐Military staff ☐Farm workers ☐ Students

☐Other (please specify):

Race / Ethnicity:
Are you asking a question about race/ethics in your questionnaire?

☐Yes ☑No

Which race categories have been used? N/A

Have you included the option: "Prefer not to answer" as part of your race/ethics question?

N/A

3. PROVISION OF SERVICES

Does your research involve the participation of or provision of services to communities?
NO
If your answer is YES, please complete below:

3.1 Is the community expected to make decisions for, during or based on the research?	YES	NO
3.2 At the end of the research will any economic or social process be terminated or left unsupported, or equipment or facilities used in the research be recovered from the participants or community?	YES	NO
3.3 Will any service be provided at a level below the generally accepted standards?	YES	NO

If you answered YES to any of these questions, please describe below how you plan to address these issues.

3. ORGANISATIONAL PERMISSION

If your research is being conducted within a specific organisation, please state how organisational permission has been/will be obtained: **N/A**

Have you attached the letter from the organisation granting permission? (please select)

☐ Yes ☐ No, but this **will be** obtained before commencing the research ☑ Not applicable

Are you making use of **UCT staff** as respondents for your research? (please select) ☐ Yes ☑ No

If yes, have you contacted Executive Director: Human Resources for permission? (please select) ☐ Yes ☐ No **N/A**

Was approval granted? (please select) ☑ Yes ☐ No ☐ Awaiting a response

Contact Emails: Executive Director: Human Resources (**Miriam.Hoosain@uct.ac.za)**
Executive Director: Student Affairs (**Moonira.Khan@uct.ac.za)**

4. INFORMED CONSENT

What type of consent will be obtained from study participants?

- ○ Oral Consent
- ○ Written Consent
- ● Anonymous survey questionnaire (covering letter required, no consent form needed)
- ○ Other (please specify)

How and where will consent/permission be recorded? **N/A**

Have you attached an informed consent form to your application? ☐ Yes ☐ No **N/A**

5. SPONSORSHIP OF RESEARCH

If your research is sponsored, is there any potential for conflicts of interest? If your answer is YES, please complete below

4.1 Is there any existing or potential conflict of interest between a research sponsor, academic supervisor, other researchers or participants?	YES	NO √
4.2 Will information that reveals the identity of participants be supplied to a research sponsor, other than with the permission of the individuals?	YES	NO √
4.3 Does the proposed research potentially conflict with the research of any other individual or group within the University?	YES	NO √

If you have answered **YES** to any of these questions, please describe how you plan to address these issues (append to form)

6. RISK TO PARTICIPANTS

Does the proposed research pose any physical, psychological, social, legal, economic, or other risks to study participants you can foresee, both immediate and long range? **(please select)**

☐ Yes ☑ No

If yes, answer the following questions:

1. Describe in detail the nature and extent of the risk and provide the rationale for the necessity of such risks
2. Outline any alternative approaches that were or will be considered and why alternatives may not be feasible in the study
3. Outline whether and why you feel that the value of information to be gained outweighs the risks

1.

2

3.

I certify that I have read the Commerce Faculty Ethics in Research policy ☑
(http://www.commerce.uct.ac.za/Pages/ComFac-Downloads**)**

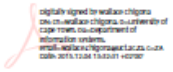
I hereby undertake to carry out my research in such a way that

- there is no apparent legal objection to the nature or the method of research; and
- the research will not compromise staff or students or the other responsibilities of the University;
- the stated objective will be achieved, and the findings will have a high degree of validity;
- limitations and alternative interpretations will be considered;
- the findings could be subject to peer review and publicly available; and
- I will comply with the conventions of copyright and avoid any practice that would constitute plagiarism.

Signed by:

	Full name and signature	Date
Principal Researcher/Student:	Joseph Morrison 	19 October 2015

This application is approved by:

Supervisor	Wallace Chigona 	04.12.2015
HOD (or delegated nominee – for all Honours Projects):		
Chair: Faculty EIR Committee (only for postgraduate research at Master and PhD level)		3.12.2015

CHECKLIST	SELECT
A full copy of a research proposal or a literature review with methodology is attached in a separate file	☑
Interview schedules / cover letters / questionnaires / forms and other materials used in the study are attached in separate files	☑
Organisational consent letter / UCT student or staff approval letter	☑

On your cover letter to your questionnaire have you included the following?	N/A ☐
1. The following UCT Logo 	☑
2. A sentence explaining the aim of the research	☑
3. Sentences of a similar nature to below must be included in the cover letter or consent form:	☑
This research has been approved by the Commerce Faculty Ethics in Research Committee.	☑
Your participation in this research is voluntary. You can choose to withdraw from the research at any time.	☑
The questionnaire will take approximately X minutes to complete	☑
You will not be requested to supply any identifiable information, ensuring anonymity of your responses.	☑
Due to the nature of the study you will need to provide the researchers with some form of identifiable information however, all responses will be confidential and used for the purposes of this research only.	**OR** ☐
Should you have any questions regarding the research please feel free to contact the researcher (insert contact details).	☑
4. Have you scanned in your signature for the last section of the form?	☑

11. Appendix D: Factor Analysis Results

Construct	Variable	Factor Loadings (Varimax normalized) (Telework_2016_ALL in Telework_2016_Final_cleansed_ALL) Extraction: Principal components (Marked loadings are >.600000)									
		Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9	Factor 10
Economic Benefits	ECON_BNF1	0.117368	0.152553	0.066113	0.028404	0.181087	0.805000	0.147926	0.141058	0.052876	0.250183
	ECON_BNF2	0.113245	0.080872	0.046953	0.077640	0.094736	0.863457	0.174635	0.038849	0.160210	0.163063
Productivity	PROD_BNF1	0.155365	0.098042	0.156698	0.153596	0.861553	0.097246	0.201729	0.071463	0.161778	0.148794
	PROD_BNF2	0.154335	0.115897	0.088067	0.212543	0.844492	0.114988	0.225121	0.085647	0.124765	0.170448
	PROD_BNF3	0.109131	0.147368	0.230050	0.160360	0.833933	0.111682	0.203963	0.064997	0.107280	0.103949
Career Development	CAR_BNF1	0.875329	0.100602	0.008498	0.020646	0.187537	0.142028	0.189122	0.086257	-0.027631	0.127193
	CAR_BNF2	0.877963	0.029664	0.061639	0.146236	0.063396	0.025537	0.131804	0.056773	-0.004886	0.183511
	CAR_BNF3	0.862509	0.082721	0.066349	0.111936	0.109643	0.037711	0.146664	0.145084	-0.021176	0.269497
Quality of Life	QOL_BNF1	0.227016	0.077871	0.013457	0.382673	0.139017	0.270992	-0.057948	0.126960	0.276159	0.611484
	QOL_BNF2	0.389694	0.030957	-0.005048	0.397950	0.267017	0.173029	0.014163	0.192027	0.159303	0.459553
	QOL_BNF3	0.447213	0.002346	-0.065754	0.282112	-0.025343	0.143437	-0.058516	0.050359	0.184910	0.507728
Peer Influence	INFL_FRNDS1	0.101271	0.168819	-0.076688	0.686328	0.107432	0.021099	0.143266	0.557197	-0.071454	0.073910
	INFL_FRNDS2	0.103405	0.171814	-0.068678	0.660681	0.115318	0.066773	0.111375	0.566099	-0.082507	0.052812
	INFL_COL1	0.112468	-0.038168	0.206714	0.213141	0.039926	0.079955	0.055092	0.857665	0.066305	0.170072
	INFL_COL2	0.108397	-0.031177	0.175809	0.189166	0.084960	0.099277	0.045487	0.877150	0.076654	0.149447
Superior Influence	INFL_SUP1	0.144878	0.169115	0.789281	0.101271	-0.000013	-0.103732	0.068500	0.400204	-0.039943	0.120256
	INFL_SUP2	0.175433	0.107674	0.801783	0.059572	-0.014169	-0.067135	0.027051	0.398725	0.012179	0.128970
Family Influence	INFL_FAM1	0.048258	0.074812	0.122438	0.873378	0.082604	0.010930	0.024163	0.006606	0.121915	0.240724
	INFL_FAM2	0.114576	0.050952	0.094413	0.835947	0.131262	0.061317	0.059375	-0.045627	0.168787	0.281459
Job Compatibility	JOB_COMP1	0.216703	0.314500	0.198288	0.087837	0.081884	0.069732	0.700906	0.152262	0.151176	0.032788
	JOB_COMP2	0.128648	0.237384	0.088422	0.157358	0.056093	0.065219	0.719792	0.176400	0.138487	0.242283
Self Efficacy	SELF_EFF1	0.163290	0.010119	0.150303	0.063220	0.288174	0.096639	0.785148	0.045035	0.234515	0.153059
	SELF_EFF2	0.104666	0.214249	0.163922	0.163687	0.247349	0.169566	0.727754	-0.077443	0.267531	0.053329
	SELF_EFF3	0.034847	0.126999	0.108388	0.142798	0.179448	0.086962	0.728788	-0.012837	0.341886	0.180226
Support	SUPP1	0.091042	0.870194	0.011353	0.075791	0.096246	0.051684	0.192839	0.029352	0.251180	0.142618
	SUPP2	0.085989	0.881572	0.014621	0.074358	0.111070	0.064175	0.156862	0.011523	0.245680	0.122907
Workspace	WSPACE1	-0.046243	0.206041	0.029797	0.020590	0.208118	0.085539	0.287110	0.112998	0.790595	0.175132
	WSPACE2	-0.090932	0.211870	0.068857	0.011985	0.218779	0.099819	0.293353	0.102735	0.790268	0.171457
Technology	TECH1	0.177108	0.333632	-0.005081	0.319960	-0.057927	0.057421	0.337401	-0.059584	0.631688	-0.141891
	TECH2	0.145891	0.453443	0.036896	0.330433	0.029340	0.073887	0.308168	-0.067216	0.597463	-0.107633
Attitude	ATT1	0.224533	0.271136	0.113206	0.337983	0.183204	0.182154	0.228361	0.050025	-0.020618	0.682604
	ATT2	0.203384	0.057471	0.026038	0.217419	0.142030	0.072292	0.206801	0.177337	-0.070878	0.755122
	ATT3	0.201956	0.026609	-0.024992	0.227525	0.111015	0.133934	0.384648	0.165370	0.068844	0.747178
Subjective Norms	SUBJNORM1	0.108095	0.066382	0.102635	0.755137	0.128163	-0.000614	0.232430	0.327233	0.039693	0.133989
	SUBJNORM2	0.064595	0.025456	0.151846	0.766397	0.144212	0.048307	0.198847	0.211888	0.168950	0.241676
Behavioral Control	BEHCONT1	-0.086103	0.522567	0.118325	0.204430	0.129635	0.123488	0.259627	-0.052892	0.534978	0.002014
	BEHCONT2	0.057158	0.539697	0.296558	0.093453	0.194260	0.238103	0.394939	0.089967	0.167868	-0.011738
Telework Adoption Intention	TWFREQ_INT	-0.073737	-0.039271	0.698549	0.086522	0.240415	0.185789	0.219626	-0.097261	0.064894	-0.078281
	TWPROP_INT	-0.071281	-0.010348	0.727647	0.075285	0.266719	0.101793	0.243402	-0.065559	0.095104	-0.080871
	Expl.Var	3.234083	3.012922	2.761379	4.725812	2.983070	1.878328	4.107524	2.915305	3.068500	3.273688
	Prp.Totl	0.082925	0.077254	0.070805	0.121175	0.076489	0.048162	0.105321	0.074751	0.078679	0.083941
	Cumulative Variance	35.75%	47.29%	54.46%	61.20%	66.14%	70.05%	73.53%	76.73%	79.36%	81.95%

12. Appendix E: Correlation Analysis – All Variables

Variable	ECON BFT	PRODTY	QOL	CAR DEV	**ATT**	INFL_ SUP	INFL_ FAM	INFL_ PEERS	**SUBJ NORM**	TECH	WRKSPCE	SUPP	SELFEFF	JOB COMP	**BEH CONT**
PRODTY	0.384														
QOL	0.420	0.407													
CARDEV	0.304	0.353	0.545												
ATT	0.453	0.463	0.722	0.516											
INFL_SUP	0.124	0.251	0.172	0.269	0.263										
INFL_FAM	0.226	0.367	0.547	0.262	0.512	0.212									
INFL_PEERS	0.241	0.319	0.488	0.310	0.462	0.443	0.476								
SUBJNORM	0.261	0.428	0.517	0.310	**0.542**	0.359	0.761	0.655							
TECH	0.242	0.293	0.302	0.200	0.235	0.082	0.371	0.192	0.372						
WRKSPCE	0.355	0.417	0.271	0.108	0.292	0.125	0.258	0.173	0.304	0.565					
SUPP	0.288	0.318	0.270	0.232	0.318	0.153	0.242	0.188	0.240	0.568	0.498				
SELFEFF	0.402	0.551	0.301	0.320	0.463	0.231	0.303	0.224	0.411	0.551	0.551	0.435			
JOBCOMP	0.343	0.420	0.314	0.383	0.500	0.295	0.288	0.360	0.396	0.521	0.499	0.468	0.687		
BEHCONT	0.390	0.467	0.235	0.172	**0.321**	0.306	0.267	0.225	**0.358**	0.648	0.551	0.613	0.598	0.572	
TWADOP_INT	0.197	0.409	0.053	0.033	**0.116**	0.449	0.147	0.122	**0.184**	0.195	0.239	0.125	0.385	0.351	**0.336**

13. Appendix F: T-test Results (Teleworkers and Non-Teleworkers)

Variable	T-tests; Grouping: TWORKER			
	Mean Teleworkers N=52	Mean Non-Teleworkers N=68	t-value	p-value
Telework Adoption Intention	4.490	2.580	7.407	0.000
Attitude	6.115	5.936	0.880	0.380
Subjective Norms	4.567	4.227	1.281	0.202
Perceived Behavioural Control	6.567	5.911	3.694	0.000
Economic Benefits	5.942	5.470	1.865	0.064
Productivity	6.115	5.313	3.408	0.000
Quality of Life	5.532	5.235	1.267	0.207
Career Development	4.358	4.299	0.208	0.835
Superior Influence	4.644	3.485	4.216	0.000
Family Influence	5.355	4.838	1.824	0.070
Peer Influence	4.610	4.216	1.658	0.099
Technology	6.605	6.257	2.160	0.032
Workspace	6.134	5.786	1.497	0.137
Support	6.163	5.625	2.270	0.024
Self-efficacy	6.461	5.965	2.548	0.012
Job Compatibility	6.192	5.419	3.003	0.003

Appendix F (continued): T-test Results (Managers and Non-Mangement)

Variable	T-tests; Grouping: MGMT			
	Mean Managers N=32	**Mean Non-Management N=88**	**t-value**	**p-value**
Telework Adoption Intention	3.562	3.352	0.602	0.548
Attitude	5.958	6.034	-0.331	0.741
Subjective Norms	4.343	4.386	-0.142	0.886
Perceived Behavioural Control	6.171	6.204	-0.155	0.876
Economic Benefits	5.593	5.704	-0.385	0.700
Productivity	5.614	5.678	-0.229	0.818
Quality of Life	5.239	5.409	-0.642	0.521
Career Development	3.927	4.469	-1.702	0.091
Superior Influence	4.296	3.875	1.285	0.201
Family Influence	5.281	4.982	0.928	0.354
Peer Influence	4.242	4.440	-0.738	0.461
Technology	6.312	6.443	-0.710	0.478
Workspace	6.203	5.840	1.389	0.167
Support	5.968	5.818	0.555	0.579
Self-efficacy	6.135	6.196	-0.274	0.783
Job Compatibility	5.359	5.897	-1.824	0.070